

392 THE Chemical Age

VOL. LXXII

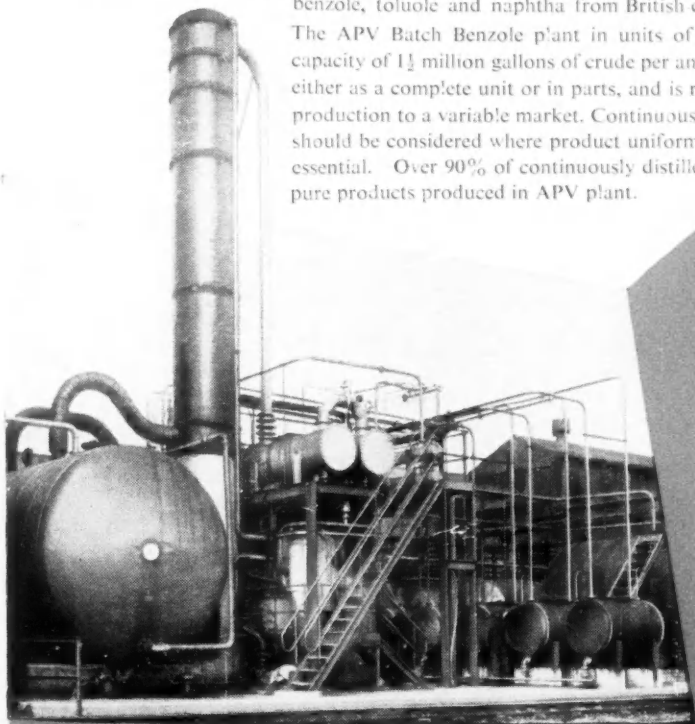
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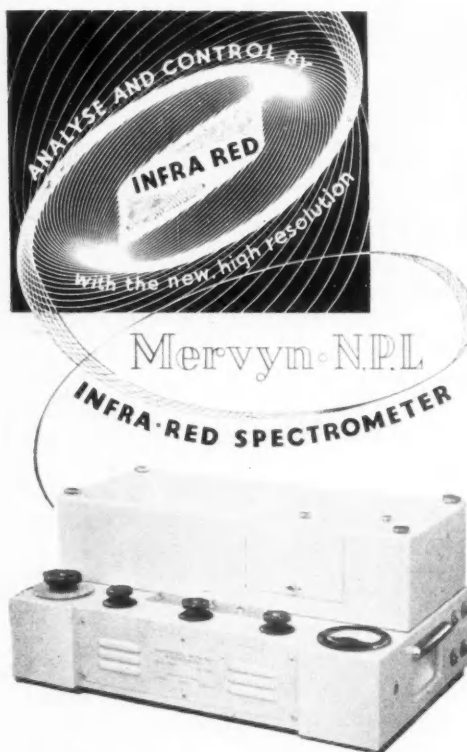


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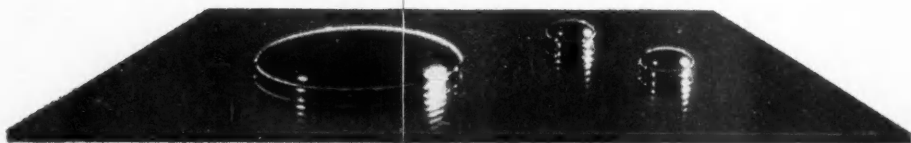
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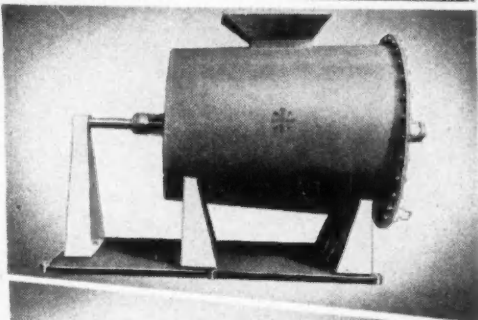
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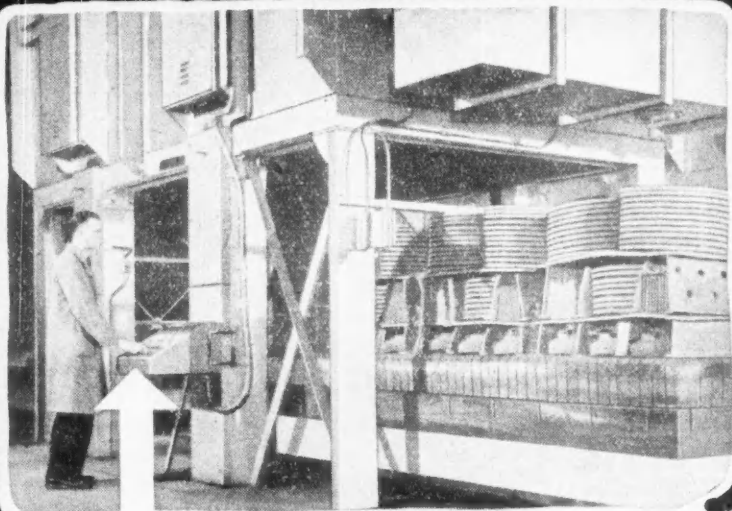
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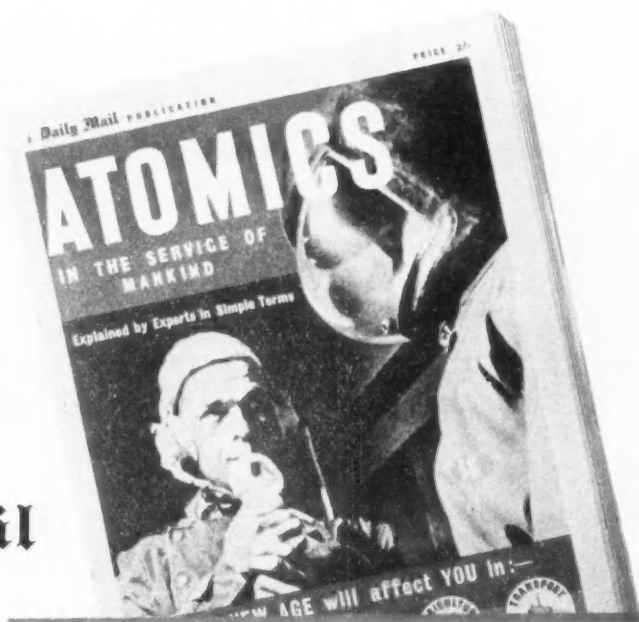
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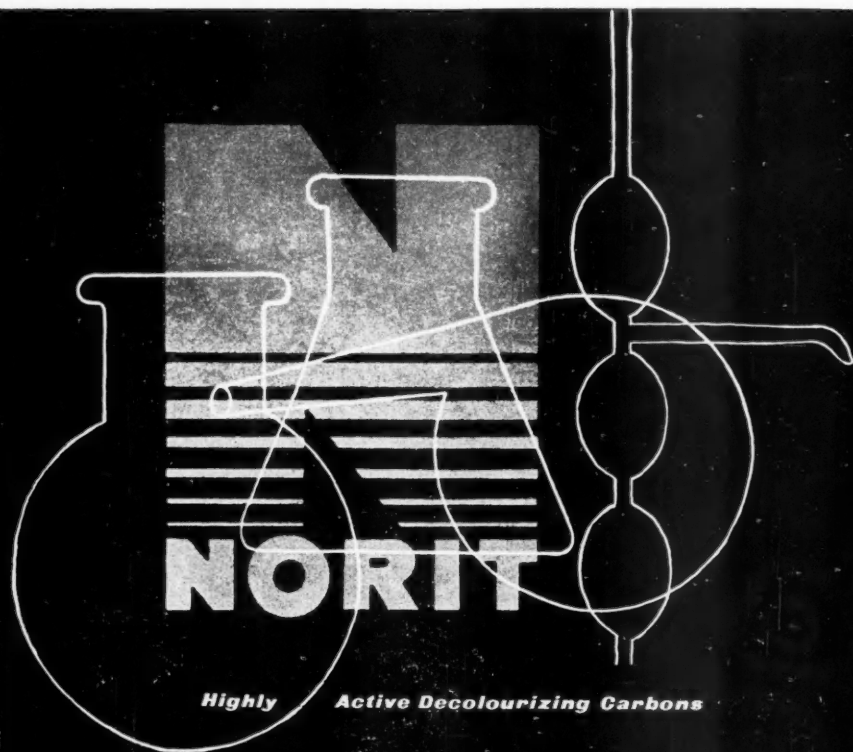
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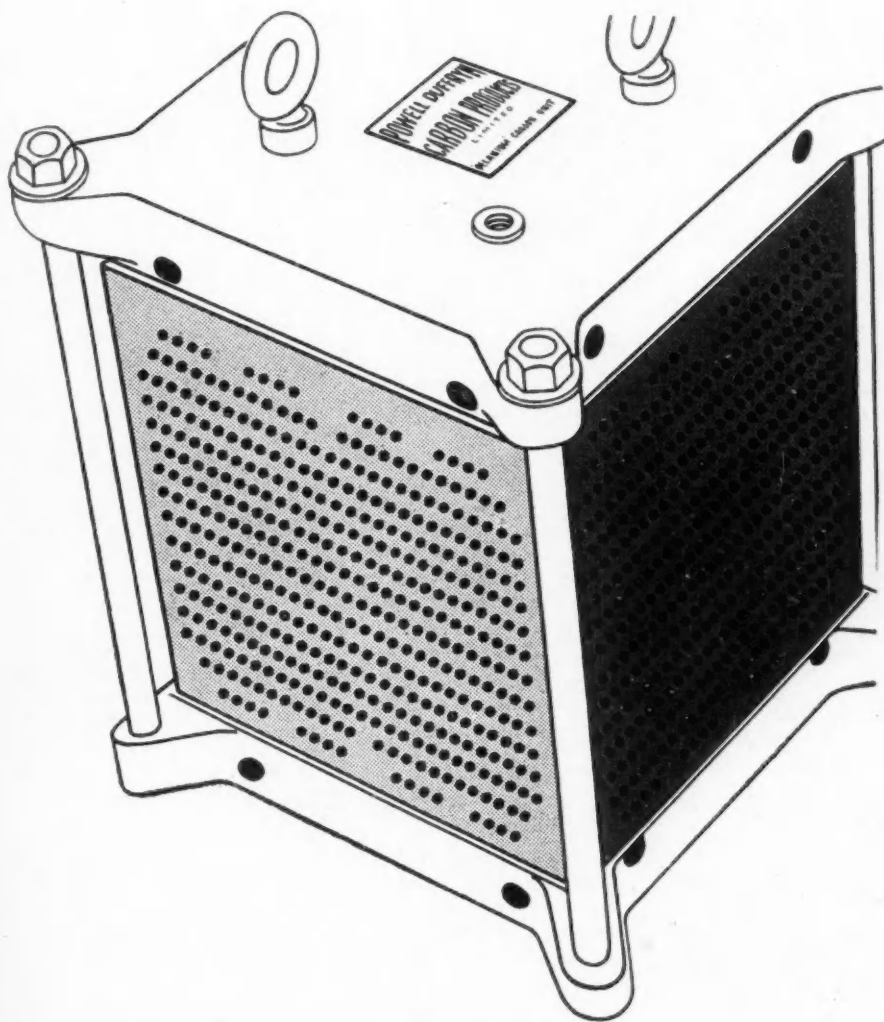
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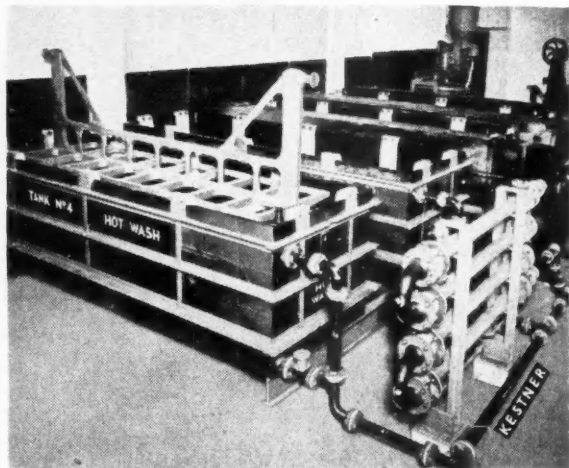
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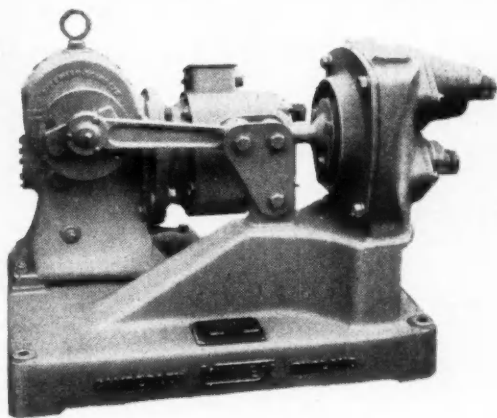
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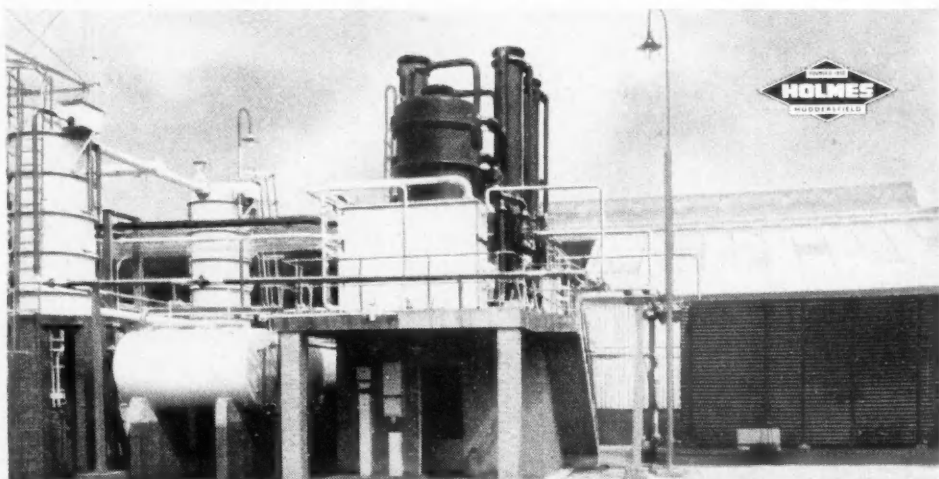
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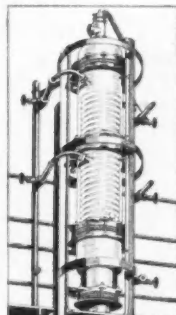
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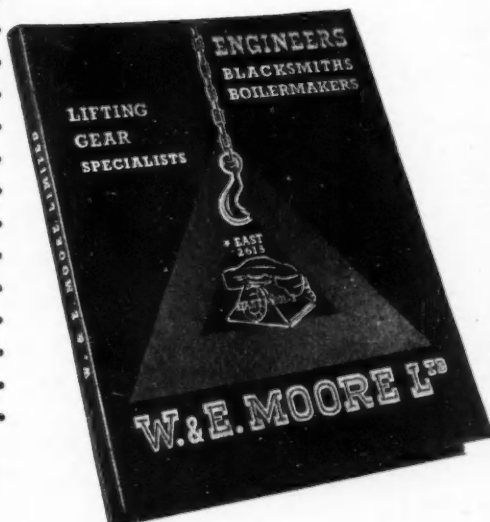
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CONTENTS

5 MARCH 1955

Leda Chemicals Eighteen Months Old	581
Expansion at Murex Welding Processes	583
Indian Newsletter	585
ILO Committee Adopts Safety Symbols	587
Greater Safety Means Greater Profits	588
Safety Notebook	590
Tin Research	593
End of a Visit	594
Home News Items	595
Overseas News Items	596
Personal	597
Publications & Announcements	599
Law & Company News	600
Next Week's Events	604
Petrochemicals Bid	606
Market Reports	606

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Materials versus Chemicals

NOT often can a paper based largely upon empirical knowledge and practical cause-and-effect studies be ranked as an outstanding contribution. Such a paper was presented in London last week by Mr. C. W. Marler at a meeting of the Fertiliser Society. The Fertiliser Society is still a young organisation; it will celebrate only its eighth birthday early this summer. From its first meetings the Society has maintained a high standard, its membership has steadily grown, and its published *Proceedings*—which give the orally presented papers in printed form with an account of the discussion—already comprise a unique library of monographs on modern fertiliser science and technology. The Society from time to time discusses subjects of ancillary importance to the fertiliser industry. Last week's meeting was devoted to works structures, their design and their corrosion problems. It is perhaps the second paper of the two, dealing with corrosion risks and remedies, that will make the greater appeal to chemical industry in general.

The fertiliser industry is notoriously exposed to corrosion troubles. It handles heavy chemicals in bulk and on a large scale. Most of these chemicals are hygroscopic. In many factories sulphuric acid is used, and often both made and used, to convert mineral phosphate into superphosphate. For ease of intake, since much of the raw material required must be imported, factories are usually in coastal or waterside sites, thus adding marine atmospheric risks to the corrosion risks of the chemicals handled.

Increasingly today raw materials and final products have to be stored for long periods, for the demand by farms is acutely seasonal. There may be other branches of the chemical industry where specially severe corrosion troubles have to be faced, e.g. where fluorine or hydrofluoric acid must be used, but it may be doubted whether any section has to endure such a wide range of these difficulties.

Mr. Marler's paper surveyed what is so far known about these corrosion problems with great attention to detail. Few members of his audience can have suspected that so much was known or, more importantly still, that so much to combat corrosion could be done. In the Society's Inaugural Address it was said that the industry, lacking such a forum for discussion, had been over-secretive in its past. Mr. Marler's company, one of the largest fertiliser producers in this country, could not have been more generous in allowing so much information to be broadcast. In general, knowledge about the main corrosion hazards can be described as measured experience though in some cases proven or plausible theory can also illuminate the facts. When it is pointed out that Mr. Marler covered the story of corrosion from soil attack in factory building sites to corrosion of drains and metal surfaces and roofs, the range of his paper will be more fully understood.

Sites of fertiliser factories begin with trouble, particularly where rebuilding or extension building is involved. Free acid

may occur in the soil, but far more insidiously the presence of sulphates and sulphate-reducing bacteria is to be expected. The attack of sulphates upon cement mortars and concretes represents a serious threat to new buildings—and unhappily for the fertiliser industry one of its most universal materials, ammonium sulphate, is particularly aggressive. Modern sulphate-resisting cements and concretes, despite their greater cost, may often prove more economic as materials of construction. Steel or cast iron as footings, pipes, or drains in foundation work will be attacked by sulphate-reducing bacteria; a combination of cathodic protection and surface painting is recommended. An interesting sidelight on this subject is the danger of using adjacent space for dumping waste materials. This may create untold trouble when later it is decided to build on the empty land, the soil being so contaminated with corrosive substances that it must be removed and replaced with other soil at a high cost. The corrosive risks that may be generated by dumping wastes 'at home' may also affect the foundations of existing buildings.

Considerable attention was given in the paper to effluent corrosion. Even surface waters from fertiliser works buildings may be contaminated owing to the heavy deposition of dust arising from bulk-handling and mixing. Details of extensive studies of many 'acid-resisting' cements were given. This, of course, is a problem of construction common to many sectors of the chemical industry, and the greater need for washing exhaust gases steadily increases it. More than 99.99 per cent of the materials in a wash-tower can be safely resistant but the externally weak link is the bonding cement. The experience and research reported strongly favours latex cements, used for jointing brickwork and not merely for pointing. The development of the modern granulation process has greatly widened the fertiliser industry's acquaintance with wash-tower problems, and its current experiences with different cements of this kind cannot be dismissed.

Corrosion rates of steel in contact with the more commonly bulk-stored fertiliser materials are fairly well known

and it is relatively easy to allow extra weight or size to structural units likely to suffer from such contacts. Atmospheric attack by the fertiliser works climate is a more general and serious problem. As said in the paper, some members of the industry take the easy view that protecting steelwork with paint is a waste of time and that it is more economic to let it rust away and replace periodically. The detailed studies of paints as preventives of corrosion discussed in the paper may well discourage this opinion in fertiliser and similarly corrosion-troubled industries. The importance of paint film thickness, irrespective of type of paint used, is stressed. So, too, is the proper pre-treatment of steel surfaces, by weathering and wire brushing, by pickling, phosphating, or grit-blasting and metal-spraying. (It is perhaps a little ironic that the large quantities of phosphates handled in most fertiliser works do not appreciably 'phosphate' metal surfaces and plant parts.)

The paint industry's range of products and claims is surveyed with critical independence in this paper, and users of paint may derive more enjoyment from it than manufacturers. The time-factor problem of keeping steel protected by paint is realistically discussed—the paint surface that requires frequent renewal may lead eventually to major plant shut-downs. The limitations of spray application are mentioned. As for selecting primer paints and surface paints, Mr. Marler's well-considered and experienced verdict is given and he claims that 'save under the very worst conditions steel treated in this way should not need to be repainted at intervals of less than five years and in most cases will probably last nearer ten'.

This brief account by no means covers all the topics of corrosion risk and prevention discussed by Mr. Marler. Polythene pipes, asbestos cement, Perspex, polyvinyl chloride, glass fibre resin laminates, and sprayed metal coatings were also dealt with. However, it is enough if we have stimulated the wider attention this paper deserves; though its availability in printed form in the Society's *Proceedings* will not be immediate.

Notes & Comments

Ashes to Germanium

ONLY five or six years ago it was possible to read in an authoritative work on rarer elements that 'the practical applications of germanium are few.' Now, of course, the importance of germanium in semi-conductor construction is widely appreciated, and the time may come when valves and even TV tubes are mostly displaced by transistor devices. Germanium-containing minerals are scarce, and even germanite, the main one, contains only 8 to 9 per cent. In Britain, germanium is almost entirely obtained from gas-works flue-dusts, as most of our coals (except Welsh coals) contain small amounts. A new paper in *Nature* (1955, **175**, 291) discusses the prospects of obtaining germanium from other dusts and products of coal combustion. In some methods of coal utilisation, is there a fortuitous concentration of germanium content? One promising indication of this kind has come from an analysis-survey of ashes and deposits in electrical power stations. Deposited matter in economisers and superheaters often shows an enrichment of germanium content. Although full recovery of these deposits is not always easy, it is suggested that this source of germanium has potentialities well worth further investigation.

Full Pitch

A MORE valuable source, however, is in the residual ash formed when pitch is burnt—this ash may contain 0.2 to 0.5 per cent of germanium, which is from 5 to 10 times as much as in the deposits of power house economisers etc. It became evident in studies of gas works tar that the germanium content stayed in the pitch fraction, not being lost in distillation below 450°. As considerable quantities of coal tar pitch are burnt as fuel, flue dusts at pitch-burning plants were then examined; there germanium contents were of the encouraging order to be expected from estimations of the ash and germanium content of pitch. Thus, when pitch is

burnt, a fortuitous concentration of germanium occurs; the initial ash from pitch separation and its burning has from 2,000 to 3,000 ppm. This is certainly a practical discovery of great potential value. Flue dusts from the steel and glass industries have also been studied and some materials with up to 0.3 and 0.4 per cent germanium content have been found. Less information is given about the amounts of these materials likely to be available, though the glass industry source is said to be small.

By Any Other Name

EARLY this year a conference was held in London to discuss the increased use of fertilisers; a letter now published in the current issue of the *Fertiliser Journal* criticises the use of the term 'artificial fertilisers' by one of the speakers. The view is taken that this term is incorrect and self-derogatory. Perhaps it should be discarded by scientists and members of the fertiliser industry, but that alone will not drive out of farming or even out of the everyday vocabulary a term that has been in popular use for something like a century. Many farmers do not even use the word 'fertiliser' but speak instead of 'artificial'. When the word 'artificial' was first used in this context, it was not a degraded term of description. To be 'artificial' was not to be inadequate or insincere, and goods describable as 'artificial' were greatly respected as contributions of the new and vigorous sciences. 'Artificial' lost caste as a word during the first world war, when many poor and hastily improvised substitutes had to stand in for scarce goods. From that degradation the word has never recovered. The makers of cellulose fibres recognised this and were able to drive out the term 'artificial silk' by spending large sums of money publicising 'Celanese' and 'Rayon' as new names. Unless some totally different name is devised for fertilisers, it is unlikely that the association with 'artificial' can be dispersed. Nor is such a new name required—used alone, 'fertiliser' is

quite adequate and not cumbersome as a word. Frankly, we think that fertiliser enthusiasts are over-sensitive about this time-accustomed prefix. It may make a few people believe that fertiliser plant-foods are substitutes for some imaginarily 'real' form of plant-food, but the majority use this word 'artificial' without consciousness of either its original or its more modern and degraded meaning. Fertilisers have now become too well established as essentials of modern farming for terminological clouds to darken their prospects.

Fluoselenates

PREPARATION of a new inorganic compound has been claimed by research chemists at Calcutta (*Science & Culture*, 1955, 20, 351). This is a fluoselenate, homologous with the fluosulphonate family. Copper fluoride, prepared by dissolving the carbonate in HF, is digested with selenic acid in slight excess; the addition of potassium nitrate solution to the concentrated filtrate leads to the slow precipitation of a white gelatinous substance, whose stoichiometric analysis satisfies the weight ratios of the formula $KSeO_3F$. It seems almost certain, therefore, that potassium fluoselenate has been prepared by this method, a method previously used in India for preparing oxy-fluoride complexes of non-metallic elements such as boron,

silicon and arsenic. Whether the arrival of a new family of inorganic compounds will have any practical applications seems doubtful. However, salts of potassium that can be isolated by precipitation from aqueous media are unusual enough. Also, it is indicated that the fluoselenates of copper, cadmium, zinc, and nickel are 'excessively' soluble in water. Further work in this direction is said to be in progress. It is possible, therefore, that a new method of analysis for potassium, perhaps quantitative as well as qualitative, could emerge from this Indian research.

Summoned for Black Smoke

At Manchester County Magistrates' Court, on 22 February, it was stated by Mr. J. Furness, prosecuting, that, following complaints of smoking chimneys, Irlam's chief sanitary inspector kept observation on the works of British Tar Products Ltd., Hayes Road, Cadishead. He saw black smoke coming from the chimneys. The company pleaded guilty to failing to comply with a nuisance abatement order. Mr. F. Monks, junior, defending, said there was a flash-back in the burners, as a result of which an employee was injured. The firm cleaned out the burners, which were run on pitch, and had tried various methods to prevent smoke. The magistrate made an order prohibiting a recurrence of the nuisance and awarded the council five guineas costs.



Delayed by bad weather, this 57-ton column was photographed leaving the Renfrew works of Babcock & Wilcox Ltd. for its long journey south to Shell's Stanlow refinery, Cheshire. Built to the order of the Lummus Company Ltd., the vessel is more than 62 ft. long, nearly 6 ft. in diameter, and is fabricated from 'Colmo 950' alloy steel. It will form an important part of the new £1,000,000 hydrodesulphurisation plant in the Stanlow refinery. This plant will utilise the 'trickle-phase' technique which Shell have developed to secure economies in equipment and fuel.

Eighteen Months Old

Leda Chemicals Make Organics at Edmonton

OF considerable importance is the development of Leda Chemicals Ltd. new works at their Edmonton site. In spite of the enormous difficulties inherent in the establishment of a new chemical works in the centre of London, the company has succeeded in getting into production in a number of fields of which the products will be of interest both to the chemical industry as intermediates, and to industry in general as finished products.

Noteworthy is the production of alkylated anilines by a continuous catalytic process, which has now come on stream. This is said to be the only plant of its kind in Great Britain, and the main products will be *N*-monoethylaniline and *N,N*-diethylaniline of a purity not hitherto available in this country. The process consists essentially in the vapour phase alkylation of aniline by alcohol, with completely automatic electronic control of flowrates, vapour velocities, residence time, temperature and pressure.

Another feature of the plant is the continuous regeneration of the catalyst *in situ* so that the plant can run continuously for eight months to a year before a catalyst change becomes necessary. The plant will also produce small quantities of ring substituted alkyl anilines which should be of interest to the dyestuffs industry.

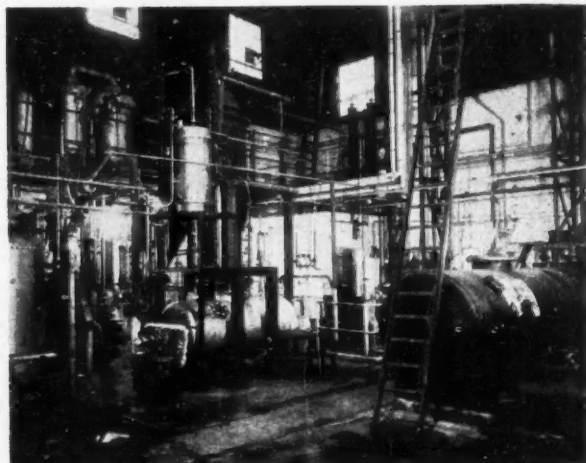
The company have also installed a com-

plete phosgenating equipment capable of handling up to 10 tons of phosgene per week. At the present time this is being used to produce a range of alkylated ureas based on the amines produced in the catalytic plant. The plant is also, however, capable of producing a range of isocyanates, a range of alkyl carbonates, and a range of alkyl carbamyl chlorides which are intermediates in the manufactures of fungicides and herbicides.

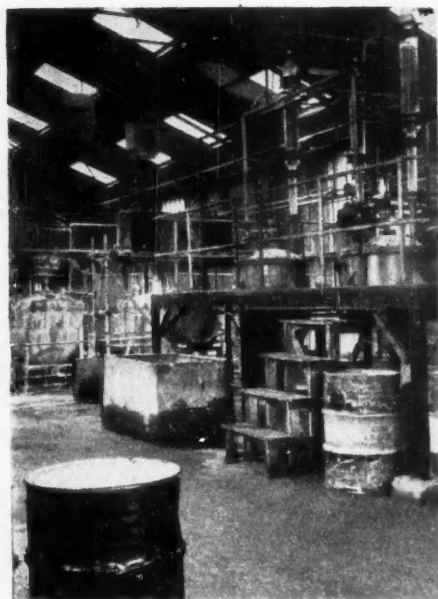
Some of the main products of Leda Chemicals are a number of alkyl chlorides produced by direct hydrochlorination of various alcohols. A new member, *n*-butyl chloride, has recently been added to the range, and this is now in continuous production on a fairly large scale. Leda Chemicals Ltd. are believed to be the only large scale source of these alkyl chlorides outside the USA.

An interesting offshoot of the manufacture of these alkyl chlorides is the chloromethylation reaction; work was only begun in the last year and small scale production has commenced of two products—chloromethyl methyl ether, and *para*-chloromethyl toluene. The latter is of interest as being a potential route to terephthalic acid.

A large and ever increasing number of quaternary ammonium compounds is being produced as new applications for these inter-



A general view of the catalytic alkylation plant at Edmonton



Part of the rubber chemicals section at Leda Chemicals

esting compounds are continually being discovered. Lauryl pyridinium chloride is produced on a large tonnage basis, and smaller amounts of cetyl pyridinium chloride, cetyl trimethyl ammonium chloride, and stearyl dimethyl benzyl ammonium chloride.

The large scale production of benzalkonium chloride was undertaken in collaboration with Bayer Products Ltd., under licence to the Hilton-Davis Corporation of America. This highly efficient germicide, although comparatively new in this country, is being enthusiastically received by hospitals and by the medical profession generally, and is also in demand overseas.

These quaternaries, although produced by batch processes, are most carefully controlled at every stage of their manufacture, and here again electronic control devices ensure a standardised product of a high degree of purity.

A range of alkyl dithiocarbamates, and of alkyl thiuram disulphides, are produced on a large scale, a high degree of purity being obtained in these products by the use of either stainless steel or glass lined equipment throughout the process.

One of the chief difficulties encountered when the company moved over to the new

site was the provision of adequate services, particularly water and effluent disposal. Thanks are due to the sympathetic consideration given to them by the Metropolitan Water Board, and the water problem was finally solved by the installation of water storage towers, together with a cooling tower and ion exchange resin equipment. Thanks are due also to the Edmonton Borough Council who placed no insuperable difficulties in their way regarding effluent disposal, and the installation of a series of effluent treatment pits and pumping stations enables them to operate with a minimum of difficulty.

The buildings consist of brick and steel structures where height is required, for example the 60 ft. high building housing the fractionating columns, and a new 45-ft. high chloride house now being erected. Other buildings and stores are of asbestos and steel construction, and these have the advantage of being readily adaptable to alteration with a minimum of cost when required. An important point is the provision of ample open concreted space so necessary in a chemical works.

When the company moved to the new site eighteen months ago it was an open field with a single building on it. The new works represent a real achievement of which the company and all connected with it can be justly proud.

Two New Canadian Plants

CONSTRUCTION programmes for two big chemical plants in Canada are in the final planning stages, according to the Montreal correspondent of *The Financial Times*. The plants, which together will cost about \$40,000,000, will produce nitrogenous fertilisers. One, in the Winnipeg area of Manitoba, will be erected by a new company, Canadian Hydrocarbons, and the other, which will be in either Medicine Hat or Lethbridge, Alberta, by North West Nitro Chemicals. Both companies plan to obtain their basic raw material from Western natural gas.

Canadian Hydrocarbons has been set up as a financing organisation by Winnipeg and Central Gas Company and the Power Corporation of Canada and several other participating interests, including an unnamed US company, says the report.

Expansion at Murex Welding Processes

New Research Facilities

NEW extensions to the research laboratories of Murex Welding Processes Ltd. at Waltham Cross have recently been completed, bringing the floor area up to 28,800 sq. ft. The additional facilities are designed to provide for the increasing volume of research work carried out by the department and reflect the great progress made by the welding industry in recent years.

Main purpose of the research laboratories is the development of new and improved electrodes to meet the ever-increasing application of metal-arc welding, and the work of the department can be divided into four main categories:

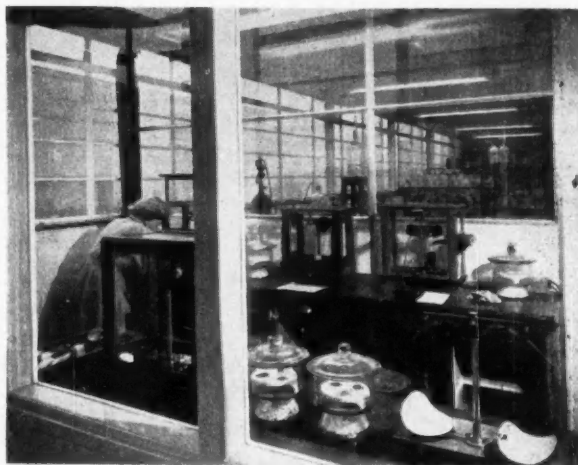
Basic research into problems associated with the raw materials used in the manufacture of electrodes and with the application of the arc-welding process itself; the development of new electrodes; control of electrode quality and development of methods for controlling the quality of raw materials and finished electrodes; and technical service to customers, and co-operative research with other organisations.

Separate laboratories have been provided for welding research; electrode development; process research; mechanical testing; chemical analysis; gas analysis; metallographic and metallurgical investigations; heat treatment; physical measurements; spectrographic analysis; radiographic exam-

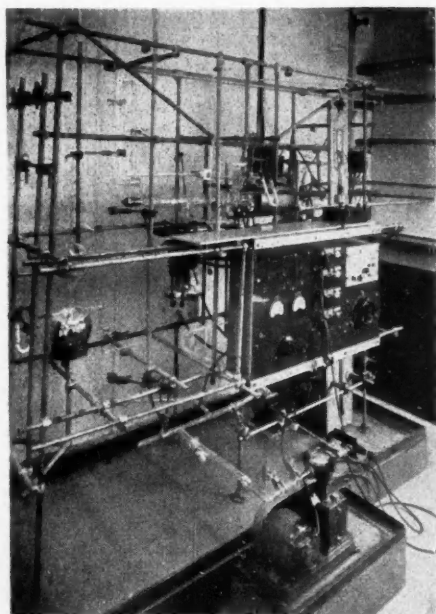
ination; X-ray crystallography; research on welding of non-ferrous metals; and automatic welding. There are also three dark rooms, balance, microscope and polishing rooms, a room for grinding mineral powders, welding demonstration room, machine shop and stores. At the present time the welding school and lecture theatre are also housed in the research block.

The welding research section is housed in a new laboratory which contains 17 individual welding cubicles and has an extensive free area for large scale welding work and hot crack testing of weld metal. The laboratory contains suitable furnaces for preheating and for the heat treatment of welded test pieces. The welding cubicles incorporate features which are the result of many years of experience: they contain such items as a special control panel with 8 in. AC and DC ammeters and voltmeters, power sockets for electric tools and recorders, push buttons for remote controlling supplies from a motor generator, indicator lights, DC regulators, clockwork timers, adjustable lamps, transformer isolating switches and changeover terminals for various open circuit voltages.

There are special heating and lighting arrangements, and hot or cold air can be introduced into each cubicle as required. Fluorescent lighting, tool cupboards, adjust-



Looking through the balance room and into the chemical laboratory



Gas analysis apparatus at the laboratories of Murex Welding Processes

able seating and other adjuncts to efficient working are provided.

The electrode development laboratory contains complete pilot plant for the development and production of new and experimental electrodes. Stocks of the standard raw materials used in the factory and also of unusual minerals and core wires are held in store in the laboratory and small batches of every kind of flux can be extruded on to suitable core wires and the resulting electrodes dried under carefully controlled conditions. The ball mills and sieving machinery are housed in a separate room to minimise noise and dust nuisance.

The effect of the presence of gases, and particularly hydrogen, in weld metals has been the subject of much research in recent years. In the non-ferrous metals the gas which is taken into solution during the time the metal is in the molten state may cause porosity in the metal if it is unable to escape before the metal becomes solid. In the hardenable steels hydrogen, in addition to causing porosity, can promote cracking in or adjacent to a weld.

Apparatus has been constructed in which a sample of steel can be heated in an evacu-

ated glass tube, and any freed gas pumped into a measuring system and, in certain cases, analysed. Other apparatus for the study of the solubility effects of hydrogen in steel and for the determination of the total gas content of a steel by vacuum fusion is under construction.

The chemical analysis laboratory is responsible for the routine analysis of the many raw materials used in electrode production and of the weld metals deposited. The metallurgical laboratory contains a high speed slitting wheel for sampling hard facing deposits too hard to be cut by normal means; microscopes are available for examination and photography of specimens at all magnifications from $\times 3$ to $\times 2,000$. The non-ferrous laboratory includes a flame photometer and a Reichert microscope which has been modified for macro-photography.

The research department is housed in a single storey brick building; the floors are of concrete covered with granolithic finishes, tiles, composition, acid-resisting asphalt or linoleum, according to the function of the particular section. Experiments were made to determine the best colour scheme for those sections of the laboratory in which welding is carried out, and myosotis blue, with a reflectivity of about $1/10$ that of white paint, was chosen; this colour predominates throughout the department, with all pipelines painted in standard colours.

Trade with Rhodesia

BRITISH trade with the Federation of Rhodesia and Nyasaland has to meet strong competition from South Africa. In the field of chemicals and fertilisers, for example, total imports of £3,200,000 since September, 1953, included only £1,000,000 from the UK—mainly fertilisers—and £1,200,000 from South Africa. The latter country had a predominant share of the business in disinfectants and germicides, pesticides, non-spiritous medical preparations, superphosphates, non-spiritous perfumery and toilet preparations.

In the same period imports into the federation of the oils, waxes, resins, paints and varnishes group of products amounted to £5,500,000. Of this, only £448,442—half the South African share—came from the UK.

Indian Newsletter

FROM OUR OWN CORRESPONDENT

A RAPID and reliable method for the determination of uranium has been developed at the Chemistry Division of the Indian Atomic Energy Commission's Laboratories in Bombay. The method is simple and is based on the quantitative separation of tetravalent uranium as the fluoride and the final titrimetric estimation of uranium, after reduction in a Jones reductor, with potassium permanganate. Complex minerals like samarskite containing uranium are broken down with 40 per cent hydrofluoric acid. Uranium is reduced quantitatively to the tetravalent state with stannous chloride and precipitated as the fluoride along with the fluorides of thorium and rare earths. The precipitate after digestion with a mixture of concentrated nitric and sulphuric acids and dilution is passed through a Jones reductor, when only the uranium is reduced. The resulting solution is titrated with standard potassium permanganate. A blank is determined and when cerium is present a correction is applied. On comparison of this method with the conventional methods it is shown that uranium oxide in the range 0.93 to 20.62 per cent can be quickly determined by the present method with an accuracy of ± 0.02 per cent U_3O_8 . The method can also be applied to alloys of the metal. The Rare Mineral Laboratory of the Atomic Energy Commission, New Delhi, have utilised autoradiography for a quantitative study of the percentage of uranium present only in the radioactive mineral portion of an ore. In another study at the Indian Institute of Science, a yellow plant pigment, morellin, has been used in the estimation of uranium. Morellin forms a complex compound and its absorption spectrum shows a maximum at 540 $m\mu$. The complex is stable between pH 5-7. Morellin is superior to thiocyanate in acetone or dibenzoyl-methane, as interference from cobalt, chromium, magnesium, manganese, nickel and lead is negligible. The limits of tolerance of foreign ions are given. Spectrophotometric investigations have indicated the nature of the complex and show that the hydroxyl and ketonic groups of morellin take part in the formation of a uranyl inner complex.

A coagulation theory has been put forward, in an explanation of the phenomenon of periodic precipitation known as Liesegang rings in bonded minerals like agate, chalcedony, onyx, cornelian and others, by the president of the Chemistry Section at the recent Indian Science Congress session. Studies on the common and rarer metal salt gels have shown two types of precipitation, one a layer of precipitate followed by a clear zone and the other a band of coagulated mass followed by a zone of peptised sol. The sparingly soluble salts capable of adsorbing their sols belong to the first while those that do not absorb fall into the second type. It has been found that salts like silver and lead chromates, ferric hydroxide, arsenious sulphide and some phosphates and iodides belong to the former class whereas sols of antimony and cadmium sulphides, manganese dioxide, silver and mercuric iodides belong to the latter category. Evidence for the adsorption of sols and their constituent ions by the sparingly soluble salts during formation, for the nonionic nature of sparingly soluble salts when they are formed in presence of gels, and the absence of any effect of soluble salts and colloids on the limit of supersaturation, lend support to the coagulation theory.

* * *

As a sequel to an inquiry by the Indian Tariff Commission, the Government of India have announced the granting of protection to the caustic soda and bleaching powder industry in India for a period of four years. On the basis of the current price of caustic soda, though a duty of 33 per cent is called for, the existing duty of 27 per cent *ad valorem* on caustic of UK origin has been converted into a protective duty, the standard rate of duty being fixed in accordance with relevant trade agreements. A protective duty of 15 per cent has been imposed on bleaching powder. The imports of caustic soda, bleaching powder and sodium bicarbonate will be licensed to actual users and established importers.

* * *

An agreement, the first of its kind between India and Russia, has just been concluded for the setting up of a modern integrated

iron and steel plant with an initial capacity of 1,000,000 tons of ingots to be rolled into about 750,000 tons of rolled products, such as merchant bars, heavy structurals and others. Besides rolled products, there is provision for 300,000 tons of foundry pig iron for sale. The plant is to be located in the Bhilai region of Madhya Pradesh.

The cost of the plant machinery and equipment to be supplied by Russia is estimated to be Rs.434,000,000 (£32,550,000) excluding transport charges from Russia. A technical fee of Rs.25,000,000 (£1,875,000) will be paid for setting up the plant. The entire plant will be commissioned by the end of 1959. There is provision for training Indian personnel. It may be added that the erection of further steel plant with British assistance is still in the air and further developments are watched with interest.

Prices Going Up

Sulphuric Acid will be Dearer

INCREASES in prices of a number of chemicals, largely due to higher sea freight charges, are announced this week. Perhaps the most important, because of its effect on the chemical industry as a whole, is the rise in price of sulphuric acid. With some firms this has already taken place, and a general rise, anticipated for some time, is regarded as inevitable.

According to the National Sulphuric Acid Association, this will be the first general increase since decontrol. Other factors contributing to the cost are said to be rises in wages and coal bills. Examples of the new sulphuric acid prices were given in the list of British chemical prices published in THE CHEMICAL AGE last week (p. 546).

Titanium Oxide

Laporte Titanium Ltd. announce that increased manufacturing costs and the cost of certain raw materials have forced them to increase the selling prices of their standard range of titanium oxide pigments as from 1 March. Their products are increased by the following amounts:

Runa Rutile Type Titanium Oxide					per ton
					£ s. d.
Grade RH	..	..	..	..	7 0 0
Grade RG	..	..	..	..	6 0 0
Tiona G	}	..	..	..	7 0 0
Tiona S		..	..	..
Tiona WD		..	..	..
Tiona 80	..	..	..	..	5 15 0
Tiona 50 Titanium White	..	..	..	..	4 10 0
Tiona 25 Titanium White	..	..	..	..	3 15 0
Tocarba 25 Titanium Pigment	..	..	..	..	2 10 0

Borax Consolidated Ltd. announce that from 1 April borax and boric acid prices will be increased by £1 10s. a ton. The last change in the firm's prices was on 13 November, 1953. Since then there have been various minor cost increases which they have absorbed. Now, the company states, they are faced, in common with other industries, with a substantial increase in ocean freights and associated charges. The new prices are shown in the following table:

	Paper Bags	Hessian Sacks	Hessian Sacks
	£ s. d.	£ s. d.	£ s. d.
Borax—			
Granular ..	39 0 0	40 0 0	49 0 0
Crystal ..	—	42 10 0	51 10 0
Powder ..	—	43 10 0	52 10 0
Powder, extra fine ..	—	44 10 0	53 10 0
Neobor—			
Pentahydrate borax ..	49 0 0	50 0 0	—
Dehybor—			
Anhydrous or dehydrated borax ..	59 0 0	60 0 0	—
Boric Acid—			
Granular ..	67 10 0	68 10 0	81 10 0
Crystal ..	—	76 10 0	88 10 0
Powder ..	—	74 0 0	86 0 0
Powder, extra fine ..	—	76 0 0	88 0 0
Net per ton, carriage paid address Great Britain in 1-ton lots and upwards, with the usual surcharges for smaller quantities.			

Similar increases are announced by Borax & Chemicals Ltd., whose price list after 1 April will be as follows:

	Borax	Boric Acid
	£ s. d.	£ s. d.
Pyrobor (dehydrated)—		
Paper bags ..	59 0 0	—
Hessian bags ..	60 0 0	—
V-Bor (refined pentahydrate)—		
Paper bags ..	49 0 0	—
Hessian bags ..	50 0 0	—
Commercial granular—		
Paper bags ..	39 0 0	67 10 0
Hessian bags ..	40 0 0	68 10 0
Commercial Crystal—		
Hessian bags ..	42 10 0	76 10 0
Commercial Powder—		
Hessian bags ..	43 10 0	74 0 0
Commercial Powder, extra fine—		
Hessian bags ..	44 10 0	76 0 0
BP Grade Granular—		
Hessian bags ..	49 0 0	81 10 0
BP Grade Crystal—		
Hessian bags ..	51 10 0	88 10 0
BP Grade Powder—		
Hessian bags ..	52 10 0	86 0 0
BP Grade Powder, extra fine—		
Hessian bags ..	53 10 0	88 0 0
Per ton, free delivered customers' domicile UK.		

New Agents in Eire

The Pulsometer Engineering Company Ltd. announce that they have appointed S. W. Carty & Son, of 12 Lower Mount Street, Dublin, as their agents in Eire in succession to Mr. H. M. Moore.

Call for Increased Productivity

ILO Committee Adopts Safety Symbols

WARNING symbols to be affixed to packages of dangerous substances to ensure the protection of workers, and measures to secure greater productivity were among the recommendations of the 4th session of the Chemical Industries Committee of the International Labour Organisation which met in Geneva last month. Government, worker and employer delegates from 21 countries having sizeable chemical manufacturing industries participated in the session.

The conclusions of the meeting are to be communicated to the ILO Governing Body for examination before transmission to the ILO's 70 member governments and, through them, to employers' and workers' organisations.

The Committee adopted five danger symbols to be used throughout the world to identify the chief types of hazards associated with chemicals, namely: explosion, fire, poisoning, corrosion and radioactivity. The symbols are intended for use in international trade and to be understandable in all countries irrespective of language. Simple and striking in design, they convey the warning without the aid of words.

The vote was 73 in favour, 16 against and

26 abstentions. The adverse votes and the abstentions came mainly from the employers' group, some of whom felt that the symbol for corrosive substances, a hand with corroded fingers, was too gruesome. On the other hand, the workers' group as well as the vast majority of the government delegates held that the symbol was the most appropriate warning of the dangers in handling corrosive substances.

The Committee stressed the value of appropriate labels for the protection of workers and urged the ILO, in collaboration with other international organisations, to promote the greatest possible uniformity between the systems of labelling dangerous substances in use in various branches of transport and in the manufacturing industry on the basis of the symbols adopted by the Committee. It asked the ILO to prepare, in consultation with appropriate experts, a basic list of dangerous substances to which the five symbols would apply.

By 110 votes to 1, the Committee adopted a resolution stating that a continuing increase in productivity in the chemical industries could make a major contribution to the promotion of higher standards of living and



The five danger symbols put forward: danger of explosion; dangerous radiations; danger of corrosion; danger of poisoning; and danger of ignition

Industrial Safety

the health, welfare and future sustenance of a growing world population.

It stressed that workers should receive an equitable share of the direct and indirect benefits, material and other, obtained from increased productivity. The process of increasing productivity should not adversely affect the moral, physical or material well-being of labour generally, nor, under any circumstances, be achieved at the expense of human dignity. All possible measures should be taken by employers and governments to see that higher productivity does not lead to unemployment.

The Committee noted that work study was rapidly taking its place in some countries as an additional factor in securing increased production. While not an exact science, work study could provide a more equitable

basis for incentive schemes and might help to make such schemes acceptable to workers.

It was also suggested that the ILO should: collect further data on occupational diseases in the chemical industries, their incidence and protective measures against them; furnish information on vocational training methods which have proved to be the most satisfactory; collect and disseminate information on chemicals requiring special handling because of their properties and on methods in use for accident prevention and health protection in regard to these chemicals.

The Committee proposed that the agenda for its next session should include industrial relations in the chemical industries, and the question of reduction of hours of work, taking into account prevailing conditions at the time. The second item, which was proposed by the workers' group, was adopted by 54 votes to 38 with 13 abstentions.

Greater Safety Means Greater Profits

US Criticism of European Methods

CRITICISMS of the lack of safety training for foremen in Europe are made in an article by an American consultant which has been published as a pamphlet by the European Productivity Agency. The fault, it is stressed, is on the part of management rather than with the workers.

The consultant, employed by the EPA, visited seven unnamed European countries studying foreman training. He concluded that there seems to be a need to develop what in the US is considered to be one of the very important parts of foremanship—that is, to operate the job without accidents so that production can continue, quality is not affected, people are not hurt and the cost controlled all the time.

Safety legislation, machinery and buildings in Europe are good (the article continues), but in the USA it has been recognised for a long time that the problem is 80 per cent a human one and that, even if conditions are perfect, there are still a large number of accidents. The rates in the countries visited run at a conservative estimate five times higher than in the same industries in the US.

In education and training for safety there is a lag of about 25 years.

It is principally at management level that there has been a failure to make known what is wanted. In Europe the management is inclined to say that safety is up to the worker; in America it is felt to be up to the management.

The cost of any industrial accident is not merely determined by the effects of compensation and medical aid. Far greater is the indirect cost incurred by the stoppage, machinery breakdown, clerical work, investigation, inspection and reporting. In the USA it is accepted that these indirect expenses are four times as great as the direct cost and may determine the difference between profit and loss in a factory.

A safety programme is part of human relations in industry. An aggressive and organised programme shows that the company thinks about the worker, creates a good atmosphere, a team spirit, a sense of co-operation and consequent high morale.

The basic difference between the USA and Europe lies in the approach to the problem

of accident prevention. In the USA industrialists realise the major importance of the human element and have reduced the accident rate by 80 per cent through good training and education. Accident rates in Europe could be just as low, but before this can happen management must believe in safety programmes and apply them. It is not possible to obtain practical results by training only the middle management and then working down. A programme must be organised, and key people must be trained at executive, or even top management, level, so as to pursue training at foreman level and then among the workers. Then it is important to establish a good reporting system, to analyse the causes and periodically to produce a combined report of all accidents in a factory, determining the cause, type, frequency and severity.

The Safety Committee should not be a permanent body which merely ensures that the requirements of the law are carried out.

There should be a continuous rotation of members and a committee in every production shop or area.

There should be periodical refresher courses and advanced safety instruction for supervisors. By a continuing programme of training it is possible to anticipate accidents, which are caused by a limited number of identifiable factors. These can often be pre-determined and preventive action taken, and this is a technique well established in the USA. There is no reason why it should not be used in Europe.

The most rapid way of ensuring the application of safety programmes is to gather together the nucleus of good instructors who will in turn be able to train others as part of an overall safety programme (the article concludes). The training of trainers is a vital phase but one which can only be envisaged once the management has been won over to the idea of safety as a vital factor in production and productivity.

Safety Notebook

NEW products shown at the 'Stay Alive' exhibition in Glasgow, opened by the Lord Provost, Thomas Kerr, on 5 February, included Saf-I-Chem chemical goggles, introduced to meet the need for complete protection of the eyes in chemical, foundry, and allied work. The soft pliable PVC frame has rolled edges moulded in a tight seal to the facial contours preventing entry of liquids, has a non-corrosive metal hood over fine mesh screen vents to give ample ventilation and prevent fogging yet giving at the same time full prevention from splashing.

The acetate lens in optical plastic is resistant to all chemicals and is made to BSI specifications for impact and piercing resistance. It is made in two models, a yellow frame with clear lens for acid operations or in crystal frames giving a greater light factor. Weight is only 1½ oz. Makers are Parmelee (OB) Ltd., Slough, Bucks.

An improved form of protective clothing for use in very high temperature work, designed by George Angus & Co. Ltd., Newcastle-on-Tyne 1, was also on show at the exhibition. This Thermofoil heat reflecting

clothing is made of three types of material—thin layers of aluminium foil on asbestos, on woollen blanket cloth and on cotton fabric, with a PVC 'sandwich.' The clothing reflects 95 per cent of the radiant heat, leaving only 5 per cent to build up. It comes in the form of a surgical jacket, leggings and mitts and headgear, or alternatively in a three-quarter length smock with knee-length gaiters.

* * *

UNDER the terms of the Benjamin Shaw Trust, a prize of £20 is offered 'for any discovery, invention or newly-devised method of obviating or materially diminishing any risk to life, limb or health, incidental to any industrial occupation and not previously capable of being obviated or diminished by any known and practically available means.' Entries may be in the form of descriptive essays or models. Another prize of £20 is offered under the Fothergill Trust for a descriptive essay or model embodying some new idea for the prevention or suppression of fire.

Entries should be sent to the Secretary of the Royal Society of Arts (Trustees for both endowments), 6/8 John Adam Street, Adelphi, London W.C.2, before 31 July. They

Safety Notebook

should be clearly marked with the entrant's name and address and the prize for which they are submitted. Essays must be typewritten. The Society cannot accommodate bulky apparatus for judging, and such entries should be submitted by means of written descriptions or models. A demonstration with the actual apparatus may be required later.

* * *

THE question of ill effects from long-continued exposure to small amounts of cadmium is being studied in the light of a recent report by a member of the staff of the Medical Research Council, Mr. Harold Watkinson, Parliamentary Secretary to the Minister of Labour, said in the House of Commons on 24 February. He was replying to a question from Mr. Harold Wilson (Lab. Lancaster, Huyton) who claimed that among the workers at the copper refinery at Prescott, Lancashire, at least six had died from cadmium poisoning.

* * *

PULSAFE nylon contour-mould plastic welding goggles have been introduced to cover the specific hazards associated with industrial techniques in the metal, chemical and allied industries. The nylon plastic is pliable but very durable, hygienic in that it can be sterilised without losing its shape and is claimed to have a longer life than other materials. The goggles have contour-fitting eye cups, sealing the eyes in complete safety. A nose-bridge adjustment is provided with double screw front for speedy change of lens, without removal of headband. The

special baffle port ventilators give ample lightproof ventilation, an important feature for their use in welding operations. This new goggle is made by Safety Products Ltd., 44 Hatton Garden, London E.C.1. Another new product from this firm is the Filtron respirator, designed for use in the welding of galvanised iron or bronze welding where the fume hazard is involved. The new respirator consists of a rubber moulded face piece, with inhale and exhale valves, the unit containing a replaceable cartridge which filters the contaminated incoming air. The unit can be worn conveniently beneath a welding helmet and is light in weight.

* * *

OLIN Mathieson Chemical Corporation's hydrocarbon chemicals plant at Doe Run near Brandenburg, Kentucky, USA, is now in its fourteenth month without a lost-time injury. On 28 December 1954 the plant broke the existing record of injury-free days for Olin Mathieson plants with more than 150 employees. More than 700,000 man-hours have been worked since the last lost-time injury on 7 December 1953. The plant will receive a certificate in its section of the National Safety Council's nation-wide safety contest for chemical plants, and employees have received a billfold, safety cigarette lighter or similar gift inscribed 'Olin Mathieson Safety Award' as a token of their part in setting the safety record.

* * *

A REVISED edition of Leaflet No. 10 in the series, 'Methods for the Detection of Toxic Gases in Industry,' has been published for DSIR by HMSO price 9d. (25 cents USA) by post 10½d. It deals with chlorine. The



Heroes of the refinery fire at Shell Haven on 23 February: Centre, Mr. T. Brookbank, chief engineer; right, Mr. H. Dobson, refinery superintendent; left, Mr. Jackson, laboratory staff man. Wearing an asbestos suit and covered with spray by the others, Mr. Brookbank walked into the flames and succeeded, at the fourth attempt, in turning off the valve of a tank holding 1,000,000 gal. of petrol

original leaflet was published in 1939, and in the new edition the sections on occurrence, poisonous effects and first aid have been re-written. The method of detection is unaltered. The leaflet describes a simple industrial test for chlorine, based on colour change, and gives complete instructions for carrying it out. There is a diagram of the apparatus used.

* * *

ALL manufacturing plants and research facilities of Celanese Corporation of America came through 1954 with an accident frequency rate of 1.57 lost-time accidents for every 1,000,000 man-hours worked, which was far below the 1953 national average of 7.44 accidents per 1,000,000 man-hours worked for all American industry. The company also chalked up an impressive record in fire prevention by reporting an average fire loss of only \$59 last year, contrasted with a national average for general industry of \$2,529 in 1953. The Narrows, Va., fibre manufacturing plant was the 1954 winner of the Harold Blancke Safety Award in the annual inter-company competition. The plant had only two lost-time accidents in the year, during which time approximately 4,000,000 man-hours were worked.

* * *

HYALINE safety goggles have been introduced for girls on light work where an eye hazard is involved and have been constructed of specially light weight materials with cable sides to make them comfortable and light in use. The curved Perspex frontage gives a very wide range of vision and is very easily replaced. Another new safety goggle from the same source is the Highway Spectacle designed as a general purpose eye protector where metal or stone working is involved. Features of this type are the ventilation which is fully protected so that no liquid or flying metal can attack the eye, and the use of Armorglas toughened safety glass. This glass is scientifically heat treated to give a thermally toughened safety lens having a high resistance to impact and mechanical shock. Makers are J. & R. Fleming Ltd., of 146 Clerkenwell Road, London E.C.1.

* * *

ISSUED by the Fire Protection Association is a handbook giving the properties of industrial solvents and flammable liquids most useful in assessing their fire hazard. A table lists the following properties of more than

Safety Notebook

300 substances: flash point, specific gravity, solubility in water (where appropriate), limits of flammability (percentage by volume in air), spontaneous ignition temperature, susceptibility to spontaneous heating, vapour density, melting point, boiling point and vapour pressure. Suitable extinguishing agents (water, foam, carbon dioxide, carbon tetrachloride, etc., or dry powder) are recommended for each product.

* * *

THE president's trophies awarded annually by Monsanto Chemical Company for the best plant safety records were won in the 1954 competition by the company's Texas City plant and the Montreal plant of Monsanto Canada Ltd. Reporting this, *Auto-clave*, Monsanto's house magazine in this country, adds that the frequency rate for company-wide operations during 1954 was 1.14 major injuries per 1,000,000 man-hours, setting a new record for the company for the fourth successive year. The Texas City plant won in the large plants group for the third time in succession and gains the trophy permanently. Awards for the most improved safety records over the past five years were won by the plants at Everett, Mass., and Seattle, Wash.

* * *

TWO new industrial barrier creams have been introduced by Alexander Duckham & Co. Ltd., Hammersmith, Duckham SCS, designed to meet protective needs in industries using dopes, paints, sprays, and chemicals, also gives coverage in the use of a wide range of solvents. Duckhams SCA has been evolved to protect workers in conditions where high acid content solutions are involved. This barrier cream is for workers in plating and textile industries and has been proved capable of standing up to a 13 per cent sulphuric acid solution.

* * *

A NEW safety data sheet on methylamines has been announced by the Manufacturing Chemists' Association. The 20-page folder, part of a continuing series, covers the properties and essential information for safe handling and use of methylamines. Copies of the folder, SD-57, Methylamines, may be obtained from the MCA, 1625 Eye Street, NW, Washington 6, DC, at 25 c. each.

Safety Notebook

ORIGINALLY developed for use in the Fawley refinery of the Esso Petroleum Co., the Litealarm (General Electric Co. Ltd.) is now being used by a number of firms to give warnings of abnormal processing conditions. It is made as a two- or three-light unit, provides a visual warning and will operate an audible alarm. It can be adapted for many applications. One example is for a pair of normally open or normally closed contacts to be mounted within or on the apparatus to be protected, the alarm unit being positioned at some remote point such as a central control room.

In the case of the two-light unit, when conditions are normal the green light is on, showing that the circuit is complete, and the red light is off. As soon as an abnormal condition develops (motor overheating, tanks full, high pressure, for example) the contacts are operated, the green light is extinguished and the red light starts flashing. Simultaneously a relay closes the hooter circuit to provide an audible alarm. Where two abnormal conditions can arise, such as high and low pressure, or high and low levels in a tank, the three-light unit should be used.

Litealarms are used by the Billingham Division of I.C.I., among other firms, as low

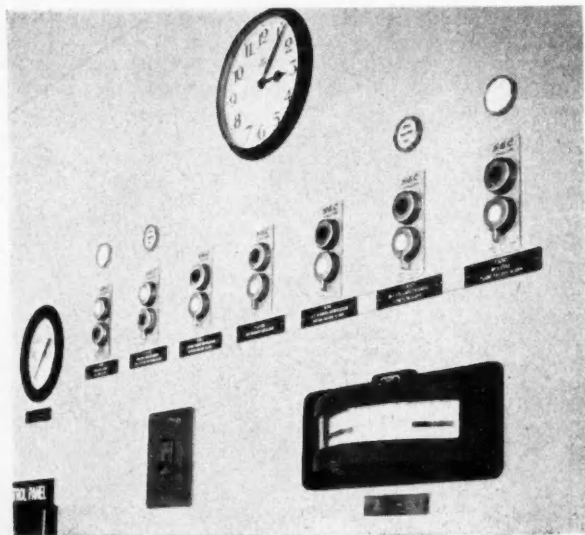
and high pressure alarms in converters, boilers and product pipe lines; low and high level liquid level alarms in all types of storage vessels; low and high level alarms in gasholders; as an alarm on failure of vital electrical drives and an alarm on failure of vital electrical supplies. The pressure and level alarm indications are usually transmitted pneumatically from the alarm point to pneumatic alarm switches mounted near the Litealarm units.

* * *

A TOTAL of 1,324 workpeople were killed in industrial accidents during 1954. 46 of them in factories producing chemicals, oils and soaps. There were 464 cases of industrial disease reported under the Factories Act, 1937, or the Lead Paint (Protection against Poisoning) Act, 1926; three of them were fatal.

There were 47 cases of lead poisoning, 155 of epitheliomatous ulceration and 221 of chrome ulceration. Other cases of poisoning during the year were: mercurial, one; manganese, one; aniline, 11, and chronic benzene, one. There were eight cases of compressed air illness.

During December there were 120 fatal accidents, including five in chemicals, oils, soap, etc., factories. There were eight cases of lead poisoning, five of other poisoning, 14 of epitheliomatous ulceration and 14 of chrome ulceration.



Close-up view of GEC Litealarm unit on a control panel at the Billingham Division of I.C.I.

International Tin Research

Report of Year's Work

THE Report of the International Tin Research Council for 1954 deals with the work of the Tin Research Institute and the eight overseas branches, in Belgium, Canada, France, Germany, Holland, Italy, Sweden and the USA.

Among the main subjects of research at the Institute's laboratories in Greenford, Middlesex, during the year were the newly perfected bearing alloys made of aluminium-tin alloy. These alloys can be used in massive form, but the main interest lies in bearings made from steel strip coated with a thin layer of aluminium tin-alloy; the difficulty of securing a strong bond between these two materials has been overcome.

The publication of an account of an improved process to increase the resistance to rusting and sulphide-staining of tinplate by immersing it in alkaline chromate solution has brought in a number of inquiries, some of which are likely to lead to interesting applications of the method. Discussions about the possible production of tinplate treated by the process have been held with tinplate makers and experiments carried out at their works.

The preservation of returnable containers of tinplate and tinned steel, which are washed in alkaline solutions and which may be exposed at times to the weather between periods of use, has been studied in laboratory imitations of service. The addition of sodium chromate to the solutions used for washing is the best preservative, but where this is not possible some sodium silicate solutions can be used without serious effect on the tin coating.

Two electroplated alloys invented at the Institute are now coming into widespread use. Tin-zinc alloy electroplate is a matt finish for steel and its performance in marine conditions, as a protective coating, is well established. Details of this finish are now available in the Ministry of Supply's Specification DTD.927. The tin-nickel alloy electroplate, on the other hand, is intended for all metals requiring a permanent brilliant finish. Both tin-zinc and tin-nickel electroplates are being widely adopted in industry.

Organotin compounds are being investigated for their possible applications in the preservation of wood, paper, textiles, etc.,

against fungi, moulds and insects. It is hoped that organotin compounds may be synthesised which can be used for plant protection.

The Report of the International Tin Research Council concludes with a list of the publications made during 1954. These cover all the main applications of tin; many of these publications are available on request, free of charge.

The Borax Story

FROM April the Borax Consolidated Ltd. head office in London will be at Borax House, Carlisle Place, S.W.1 (Tel.: VICTORIA 9070). This is mentioned in a booklet, 'The Borax Story,' published by the company to describe its operations. The booklet contains an artist's impression of the new head office which is near Westminster Cathedral.

There is also a photograph of one of the 20-mule teams which gave the firm's product its trade name. The teams were used to transport the raw material from Death Valley, California, before railways were built.

'The Borax Story' contains a history of the firm and describes the present and possible future uses of its products. Its publication was foreshadowed some weeks ago in a 'personal note' from the chairman, Mr. D. A. Smith, to stockholders (THE CHEMICAL AGE, 1955, 72, 391).

Titanium Plant Extensions

EXTENSIONS costing £750,000 now being undertaken at the plant of Laporte Titanium Ltd., at Stallingborough, near Immingham, will mean an ultimate doubling in output of titanium oxide.

The factory started production in 1953. It employs 300 men and will need 100 more when the extensions are complete. At present the ilmenite from which the titanium oxide is manufactured is brought to Immingham by rail; in future barges will be used.

About 20 per cent of the titanium oxide is exported, mainly to European and Commonwealth countries. The amount could probably be doubled, but the Board of Trade does not think it advisable to increase exports unduly while the home markets are not satisfied.

Laporte Titanium Ltd. this week announced an increase in the price of titanium oxide (see p. 586).

End of a Visit

New ACS European Representative

MR. Gordon C. Inskeep, European representative of American Chemical Society publications at their London office, left Britain with his wife and children on Sunday, 27 February, in the liner *United States*. He went 'with mixed feelings.'



Gordon Inskeep

Shortly before his departure he told a *CHEMICAL AGE* representative: 'I shall be glad to see my family again but sorry to leave all my friends in Europe. We have had a most enjoyable time here. It has been one of the most wonderful experiences a person could have.'

Mr. Inskeep came to this country two years ago, succeeding Dr. Richard L. Kenyon, who first opened the European office in London in 1950. He arrived in time to see the Coronation, which was 'most impressive,' and when his wife gave birth to a daughter nine months ago, the names they chose—Ann Elizabeth—were suggested by the names of the Queen and her daughter.

His 'beat' covered the whole of Western Europe, and during his time here he has travelled thousands of miles. In Britain he has become used to living without central heating and his fear is that when he arrives back in the USA 'the heat in the offices is going to be pretty uncomfortable.'

Mr. Inskeep has been succeeded by Mr. William Q. Hull, who arrived in this country just over a fortnight ago. A native of Georgia, Mr. Hull is a graduate chemical engineer of Vanderbilt University. He served in the US Navy in the Pacific for three years during the war, then worked for four years as an industrial engineer in Houston, Texas. Before coming to Europe he had been an associate editor of the Ameri-



William Hull

can Chemical Society publications at their San Francisco office and shortly before his appointment as European representative was made president of the Western Chemical Market Research Group, a body interested in the development of the chemical industry in the Western United States.

Mr. Hull, who is a bachelor, is making his first visit to Europe. 'I'm sure I'm going to enjoy it very much here, both living in this country and meeting the people,' he said.

Associate Membership

THE Engineering Equipment Users' Association of 20 Grosvenor Gardens, London S.W.1, was formed in 1949 to provide its members with the means of exchanging information on the standardisation of engineering materials and equipment which they use in common and, in this way, of presenting their co-ordinated views as users of such materials and equipment.

It was recently decided to extend the composition of the association to include associate membership, which entitles those companies who choose this form of membership to obtain benefits technically without the same obligation either in expense or in manpower as full members. The present full members are: Albright & Wilson Ltd.; Courtaulds Ltd.; The Distillers Co. Ltd.; Dunlop Rubber Co. Ltd.; Imperial Chemical Industries Ltd.; Monsanto Chemicals Ltd.; Shell Petroleum Co. Ltd. and Unilever Ltd. The National Coal Board, the Metal Box Co. Ltd. and the British Transport Commission have joined as associate members.

Acceptance for membership (either full or associate) is at the discretion of the Council, the primary qualification of would-be candidates being that they must be predominantly users rather than manufacturers of engineering equipment.

Jenolite Move to New Offices

On Monday 14 March, Jenolite Ltd., anti-corrosion specialists and manufacturers of industrial chemicals, are moving from their offices at Piazza Chambers, Covent Garden, W.C.2, to spacious new premises at 13-17 Rathbone Street, London W.1. (Tel.: MUSeum 5411.) For several years Jenolite Ltd. have had a number of departments operating at 13-15 Rathbone Street.

HOME

Equipment Orders

New orders received by Birwelco Ltd., Aston, Birmingham, include one for the supply and erection of a Petro-Chem Iso-Flow furnace to be installed at the Grangemouth works of British Petroleum Chemicals Ltd. The firm have also undertaken orders for the supply of three Petro-Chem Iso-Flow steam superheaters for installation at the Grangemouth plant of Forth Chemicals Ltd. and a Radiant Type Petro-Chem Iso-Flow furnace for use as a charge heater in a UOP platformer for Tankage et Transport SA of Antwerp in whose refinery it will be used.

Large Continuous Birlec Furnace

Birlec Ltd. announce that they have recently been commissioned by the Head Wrightson Machine Co. Ltd., Middlesbrough, to build a continuous driven roller hearth annealing and galvanising furnace for installation at a South Wales steelworks. This equipment will be the largest heat treatment plant of this type yet undertaken by Birlec Ltd. It will handle steel strip of up to 48 in. width at an output of 10 tons per hour.

Paint Firm Changes Name

As from 1 March the name of Photocolour Laboratories Ltd., makers of fluorescent products, has been changed to Industrial Colours Ltd. It was felt that the old name was no longer appropriate in view of the firm's expansion in the surface coating compositions field.

Ashe to Make Chlorophyll Tissue

On 9 February, DSIR issued a statement on the use of chlorophyll-impregnated tissue to prevent tarnishing of silver and copper articles (see THE CHEMICAL AGE, 29 January, p. 313). Within a few days of this official statement being issued, the National Research Development Corporation had entered into arrangements with Ashe Laboratories Ltd., Leatherhead, for the large-scale production of tissue, using chlorophyllin as produced at the Laboratories. To be named Exair Anti-tarnish Tissue, it will be available in two grades, AL/25, an 8½ lb. extra strong wet strength paper, and AL/36, a 7 lb. acid-free jewellery tissue.

New Test Laboratory for BP

A new engine laboratory, additional to existing plant, for testing motor fuels and lubricating oils is being built at BP's research station at Sunbury, Middlesex. The laboratory is expected to be fully commissioned by April next year. Cost of the building will be about £85,000.

To Entertain General Gruenther

The National Union of Manufacturers will entertain General Alfred Gruenther, Supreme Commander Allied Powers Europe, at a luncheon next month. Recently a delegation from the National Union visited NATO and SHAPE Headquarters in Paris and were addressed by General Gruenther. His talk was of such great interest that the National Union felt it should give all its members an opportunity of hearing him. General Gruenther was for some years before the war an instructor in chemistry at West Point Military Academy, USA.

Duke to Open New Laboratories

It has been announced that the Duke of Edinburgh will perform the opening ceremony of the new inorganic and physical chemistry laboratories at the University of Liverpool on 11 May. Architect to the building was Mr. R. R. Young, of Stephenson, Young & Partners, and about half the laboratory furniture and fittings were supplied by J. W. Towers & Co. Ltd., of Widnes. On the same day the Duke will also open the new laboratories of the British Rayon Research Association at Heald Green, Manchester, built at a cost of over £400,000.

Softening Up

Water coming into the Knowle and Brislinton areas of Bristol is now routed through Bristol Waterworks Company's new treatment works at Stowey, near Bishop Sutton, which were put into commission at the end of January. One stage of the purification process is softening by lime treatment, and the hardness of the water being delivered in the affected areas is about 7° instead of 21° as before. It is intended eventually to soften the whole of the Bristol water supply, but this will not be possible until the main filtration works at Barrow are reconstructed and extended.

OVERSEAS

US Lead Output Down

US domestic mine production of lead totalled 317,000 tons in 1954, the smallest figure since 1932-34 and 7 per cent below the 1953 output. The low total was largely caused by reductions in the price of lead in the years immediately before. During 1954 the price rose again.

Polish Steel Works

It is reported that the third coking battery of the coking battery section in the Lenin Iron & Steel Works at Nowa Huta, near Cracow, is ready for testing. The first tests have also begun in the blooming mill section. Parts of the electrical installations have already been tested, it is claimed.

Largest Gypsum Deposit

National Gypsum Co., Nova Scotia, is spending \$6,000,000 to develop what is believed to be the largest single commercially pure gypsum deposit in North America. The company plans an annual output by the end of 1955 of 1,500,000 tons on property some 30 miles north of Halifax.

Yugoslavia Needs More

Demand for import of fertilisers to Yugoslavia is now greater than ever before. Yugoslav factories manufacture about 52,000 tons of fertilisers annually, but this home supply has to be supplemented by orders for a further 80,000 tons, which have been placed abroad. Favourable credit facilities have been arranged.

Site of Greek Refinery Decided

It has recently been announced by the Greek Prime Minister, Field-Marshal Alexander Papagos, that it has been decided to set up the proposed oil refinery at Aspropyrgas, near Eleusis, about 10 miles from Athens. According to present plans, the refinery will be ready in two years' time.

Protest at Australian Tariff Decision

The chairman of Imperial Chemical Industries of Australia and New Zealand Ltd. told the annual general meeting that rejection by the Tariff Board of the company's application in respect of alkalis was a cause of some concern. It was regarded as a clear deviation from the definite protectionist policy adopted by all Australian governments for many years.

Titanium on the Beach

Titanium ore has been found in New Zealand coastal beaches. So far deposits seem small, but two American firms are reported to have made inquiries.

Aden Refinery at Capacity

Since the first unit of BP's new Aden refinery started up in August last year, over 1,500,000 tons of crude oil have been refined, and the refinery is now capable of operating at its full capacity of 5,000,000 tons a year.

Hungarian Fertiliser Plant Modernised

Hungary is spending £3,000,000 on modernising and extending its fertiliser plant at the Pet Nitrogen Works. The whole of the old fertiliser section is being pulled down, and a large modern plant is due for completion in August. Power and water supply equipment is to be extended.

US Detergents Firm in France

The American firm Procter & Gamble has formed a subsidiary company known as Procter & Gamble, France, SA, which has leased facilities for production of synthetic detergents from Fournier-Ferrier of Marseilles. The lease, which is for 30 years, involves production and packaging equipment at Fournier-Ferrier's plant. This is Procter & Gamble's first manufacturing venture in France. General manager of the new company is Mr. T. C. Bower, a director of Thomas Hedley & Co. Ltd., Procter & Gamble's British subsidiary.

West Coast Plant for Du Pont

The selection of a plant site near Antioch, Calif., for the manufacture of lead tetraethyl and Freon refrigerants, has been announced by E.I. Du Pont de Nemours & Co. Inc. Options are being exercised on a tract of about 500 acres approximately two miles east of Antioch on the San Joaquin River. The company announced last summer that it was contemplating the construction of lead tetraethyl facilities to meet the increasing requirements of the West Coast petroleum industry. It also said that the rapid expansion of the air-conditioning, refrigeration, and aerosol industries on the West Coast made it desirable to have facilities for the manufacture of Freon fluorinated hydrocarbons close to the point of use.

PERSONAL

Chairman and joint managing director of the Staveley Coal and Iron Company, MR. T. A. MCKENNA, has resigned the joint managing directorship but will continue in an executive capacity as chairman. MR. J. P. HUNT, joint managing director, has been appointed managing director. MR. M. FROGGATT, director and secretary, has resigned as secretary to the company and has been appointed deputy managing director. MR. H. M. EARNSHAW, assistant secretary, becomes secretary.

At a ceremony to be held at St. Andrews on 5 July, the honorary degree of Doctor of Laws will be conferred, among others, upon SIR JOHN COCKCROFT, K.C.B., C.B.E., M.A., Ph.D., M.Sc., D.Sc., Hon. LL.D., F.R.S., M.I.E.E., director of AERE Harwell, and PROFESSOR D. E. INNES, M.C., M.A., F.R.S.E., F.G.S., Emeritus Professor of geology.

DR. JAMES A. KRUMHANSI, formerly Associate Professor of Physics at Cornell University, has joined the staff of the research laboratories of National Carbon Company, a Division of Union Carbide and Carbon Corporation, as assistant director of research. Dr. Krumhansl will be located in Cleveland at National Carbon's new research centre, now under construction.

MR. R. VERNON HARCOURT, B.A., who joined Howards of Ilford Ltd., in 1948, has been appointed sales manager, solvents and technical chemicals department. MR. R. F. YORK, who also joined the firm in 1948, has been appointed assistant manager, technical developments, solvents and technical chemicals department.

The General Electric Co. Ltd. announces that MR. R. N. MILLAR, lately chief mechanical engineer to The British General Electric Co. (Pty.) Ltd., Australia, has been appointed to take charge of its newly-formed Industrial Atomic Energy Section. The new organisation is located at the company's Erith works which is under the direction of MR. ARNOLD LINDLEY. It will develop designs of plant for the utilisation of atomic energy in power station generating equipment, and it is the intention of The General Electric Co. Ltd. to provide most of the equipment for atomic

power stations from within its own manufacturing organisation.

Following the annual general meeting of the Parliamentary & Scientific Committee on 9 February, the officers for 1955 were announced: *president*, THE RT. HON. VISCOUNT WAVERLEY, P.C., G.C.B., G.C.S.I., G.C.I.E., F.R.S.; *vice-presidents*, VISCOUNT FALMOUTH, LORD GLYN OF FARNBOROUGH, M.C., THE RT. HON. A. G. BOTTOMLEY, O.B.E., MP., THE RT. HON. H. A. MARQUAND, M.A., D.Sc., MP, HERVEY RHODES, D.F.C., MP., SIR WAVELL WAKEFIELD, MP, H. J. T. ELLINGHAM, B.Sc., Ph.D., A.R.C.S., M.I.Chem.E., F.I.M., F.R.I.C., SIR HENRY TIZARD, G.C.B., A.F.C., F.R.S., W. R. WOOLDRIDGE, M.Sc., Ph.D., M.R.C.V.S., F.R.I.C.; *chairman*, SIR HUGH Linstead, O.B.E., MP; *vice-chairman*, SIR CHARLES GOODEVE, O.B.E., M.Sc., D.Sc., F.R.S.; *deputy-chairmen*, EARL OF HALSBURY, AUSTEN ALBU, B.Sc., A.M.I.Chem.E., MP; *hon. treasurer*, K. HEADLAM-MORLEY; *hon. secretaries*, SURG.-LT. CDR. R. F. B. BENNETT, V.R.D., MP, IAN WINTERBOTTOM, MP, S. WHITEHEAD, M.A., D.Sc., F.Inst.P., M.I.S.; *secretary*, LT.-CDR. CHRISTOPHER POWELL, R.N.

Changes in their marketing organisation involving a number of new appointments have been made by Shell Chemicals Ltd. As from 1 January, MR. R. A. ATKINSON, formerly manager, Northern Division, has taken over a new appointment as manager, Northern Region, comprising Northern Division, Scotland, Northern Ireland and Eire, while MR. A. D. BUCKLAND NICKS succeeds MR. I. A. MACMILLAN, on the latter's retirement, as manager, Southern Region, comprising London and Midland Divisions. MR. J. A. HEPWORTH has succeeded Mr. Atkinson as manager, Northern Division, and MR. L. G. J. ENGLE has been appointed manager, London Division. The re-grouping of divisions into regions leaves the existing marketing arrangements as between divisions and customers unchanged.

MR. A. D. McLEAN, B.Sc., joined the board of the Nobel Division of Imperial Chemical Industries Ltd. on 1 March as home sales director. Mr. McLean, who has

had extensive experience with the company both in research and in the sales organisation since 1934, was born and educated in Ayr. He attended the Royal Technical College, Glasgow, where he took a B.Sc. Honours degree before starting in the Billingham Division research department as a chemist in 1934. After four years he was transferred to head office, Millbank, and spent the next two years in the technical department, fuel section. He then returned to Billingham Division and joined the sales control section, being appointed manager, sales control (oil and tar products) in 1943. In 1948 Mr. McLean joined southern regional sales in London and ultimately became regional sales manager, organic chemicals department, the post which he holds at present.

Obituary

The death occurred recently of MR. FRANK MOSS, a director of Beecham Northern Ltd., St. Helens. Mr. Moss, who was 56, joined the firm in 1919 and succeeded his father as works manager in 1929. He was appointed to the board in 1949.

On 22 February, PROFESSOR C. O. BANISTER, M.Eng. (Liv.), A.R.S.M., F.R.I.C., Professor Emeritus of metallurgy in the University of Liverpool, died at the age of 78. Educated at Stourbridge Grammar School and the Royal School of Mines, where he was Bessemer medallist and Matthey prizeman, he became head of the metallurgy department of the Sir John Cass Institute at the early age of 27. In 1920 he was appointed to the chair of metallurgy in Liverpool, and retired in 1941.

Wasted Time in Industry

POOR organisation and outmoded methods in the average working man's day in the factory is responsible for much wasted time, said Mr. Russell M. Currie, head of the Central Work Study department of I.C.I., speaking in Manchester. Mr. Currie was addressing a joint meeting of the Institute of Industrial Technicians and the Manchester & District Productivity Committee.

Discussing the need for work study, Mr. Currie said that for the last 65 years American productivity had been increasing at twice the rate of our own. His own company, for instance, decided to attempt to

attain maximum industrial efficiency in 1946. Today, they had 1,200 men engaged thus and the number was still increasing.

As an example he mentioned a factory where working conditions were not good, but which it was not possible to replace as it was engaged in producing an important chemical. There had been a labour turnover of 62 per cent during the years between 1949 and 1952. Study and the establishment of a work measurement incentive scheme had reduced this in the last two years to between 5 and 8 per cent.

Change of Address

To cope with an ever-growing volume of business the London offices of The British Wedge Wire Co. Ltd., Warrington, makers of Wedco mechanical handling equipment, have been moved from 687 Finchley Road, N.W.2, to more commodious premises—Elmswood House, Bounds Green Road, N.11. The move also affects another member of the Wedco organisation, Modern Mechanisation Ltd., the Lehr and furnace manufacturers. The new telephone number is BOWes Park 8442 (4 lines) and the telegraphic address, Modmec London, N.11.

The Individualist Movement

To commemorate the work of the late Sir Ernest Benn and to mark the 30th year of the Individualist Movement, a luncheon will be held at the Holborn Restaurant, London, on Thursday, 17 March 1955, at 1 o'clock. The chair will be taken by Dr. John Murray, and the speakers will include Sir Carleton Allen, Q.C., Sir John Benn, and Mr. Brian Manning. Tickets (price 17s. 6d.) may be obtained from the Society for Individual Freedom, 25/27 Oxford Street, London W.1.

Margarine from Norway Preferred

Norway has developed a substantial sale of margarine to Britain, reports the Oslo newspaper *Morgenbladet*. In the second half of last year, Borgar Margarinfabrikk exported to Britain 1,964 tons, and the amount exported is constantly increasing. An investigation made by the Ministry of Food about two years ago showed that the majority of British housewives invited to try Norwegian margarine preferred it to the British margarine.

Publications & Announcements

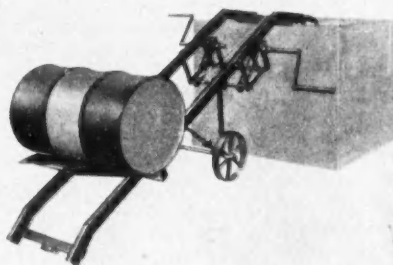
A NEW booklet 'Cellosolve and Carbitol Solvents,' has just been published by Carbide & Carbon Chemicals Company, a Division of Union Carbide & Carbon Corporation. This booklet describes in detail the nine commercial glycol ethers sold by the company. An important feature of this booklet is a section devoted to the specifications of the glycol ethers and the test methods used by Carbide to check these specifications. These laboratory control tests comprise some of the standard ASTM methods, and other methods that have been specially developed in the company's laboratories. Copies of this booklet are available from Carbide & Carbon Chemicals Company, 30 East 42nd Street, New York 17.

* * *

JUST announced by Stauffer Chemical Company is Vapam, a new and unique agricultural pesticide. Consisting of sodium N-methyl dithiocarbamate, this product has been field tested during the past two years as Compound N-869. A general purpose soil fumigant, Vapam controls practically all types of soil-borne diseases, nematodes, growing weeds and weed seeds, as well as certain species of soil infesting insects and related pests. Although especially suitable for seed bed treatment, Vapam also shows promise for a wide range of soil problems confronting farmers, nurserymen, and home gardeners. High solubility in water allows convenient application without special equipment. Vapam can be introduced into the soil through irrigation equipment, to the plough sole, or to the ground surface in connection with the use of a rototiller. With suggested methods of application no ground coverings are required. Vapam is stable in the commercial concentrated solution, but decomposes rapidly in damp soil to liberate a penetrating gas which dissipates within a few days. Under most conditions, crops may be planted within seven days of soil treatment.

* * *

NOW in production are two types of lorry loader made by Powell & Co., of Burry Port, Carmarthen, South Wales. They are designed for loading drums and barrels and with one type (SML/1) one man can lift up to 5½ cwt, working one crank handle. The SML-2 (illustrated) is for heavier loads.



There are two separate crank handles on opposite sides of the loader, and two men can lift up to 7 cwt. with it. Both models have large diameter wheels fitted, so that they can be easily moved about.

* * *

FOLLOWING intensive research work, Associated Fumigators Ltd., 112 Victoria Dock Road, London E.16, have now introduced two fluoroacetate derivatives; they are fluoroacetamide and fluoroacetanilide. Fluoroacetamide, AFL 1081, is a white crystalline solid of mp. 109° C which is very soluble in cold water and which is a powerful rodenticide, being effective against rats, mice and rabbits. It has a lower toxicity than sodium fluoroacetate and its mode of toxicity is different from that of the sodium salt; the latter at its toxic dose causes violent convulsions in experimental animals, whereas the amide at its toxic dose, some two or three times that of the sodium salt, causes milder symptoms. It is however sufficiently active to be able to replace sodium fluoroacetate as a field rodenticide while giving a greater margin of safety in handling. It is probable that its rate of conversion into fluorocitrate is much slower than that of sodium fluoroacetate so that the amount of fluoroacetate, the real toxic product (Peters, *Endeavour*, 1954, 13, 147) in the blood stream is minimal. Fluoroacetanilide, AFL 1082, is sparingly soluble in water (about 1 part in 1,000 at room temperature) and is a low melting solid (75-6° C) which has contact, fumigant and systemic insecticide action. It is to be introduced in the form of tablets for the latter purpose.

Law & Company News

New Registrations

Tremond Co. Ltd.

Private company. (15,491.) Capital £10,000. Chemical and biological manufacturers, etc. The subscribers are: Thomas W. Beattie and Elizabeth Duncan. The first directors are not named.

S.C. Company Ltd.

Private company. (543,373.) Capital £100. Manufacturers, importers and exporters of and dealers in and agents for chemical and industrial products of all kinds, etc. The subscribers (each with one share) are: A. W. Mallinson and B. Stuart-Fisher. The first directors are not named.

Company News

Anchor Chemical Co. Ltd.

Group trading profit of Anchor Chemical Co. Ltd. for the year ended 30 November, 1954, was £145,753, against £101,474. Net profit to the company was £66,587 (£45,200). The final dividend recommended is 25 per cent (22½) making a total for the year of 35 per cent (30). After the annual meeting on 28 March an extraordinary meeting will be held at which resolutions will be proposed for increasing the authorised ordinary capital by 600,000 shares of 5s. each and to make the distribution of 540,000 shares to holders registered on 21 March.

Beecham Group

The Beecham Group has declared a second interim dividend of 10 per cent on the ordinary shares.

Borax Consolidated Ltd.

Group trading profit of Borax Consolidated Ltd. for the year ended 30 September, 1954, was £1,712,834, compared with £1,385,539 for the previous year. Net profit, before profits tax in respect of distributions, rose from £699,192 to £839,420. The board, who, when they rejected a take-over bid from an American group recently forecast a dividend of 'not less than 16 per cent' announce a total payment for the year of 18 per cent, compared with 11 per cent previously. The final payment will be 14 per cent (9 per cent).

Grundig International

Gas Purification and Chemical Company announces the formation of Grundig International with a nominal capital of £10,000 as a further subsidiary within the group. The company has been formed to act as a selling agency to co-ordinate the world-wide sales connections of the Grundig and other companies within the group and is also co-operating with other manufacturers in the promotion of export sales of electronic and electro-mechanical equipment.

Hickson & Welch (Holdings) Limited

At the annual general meeting of Hickson & Welch (Holdings) Ltd. on 18 February, the chairman, Mr. Bernard Hickson, announced that permission had been received from the Capital Issues Committee to issue the proposed 300,000 ordinary 10s. shares (see *THE CHEMICAL AGE*, 1955, 72, 392) at 15s. 6d. each. The authorised capital is to be increased by £400,000 to £950,000. In his report Mr. Hickson forecast that the dividends for last year (11 per cent total) should be maintained in the current year on the increased capital.

Imperial Chemical Industries of Australia & New Zealand

Net profit of Imperial Chemical Industries of Australia and New Zealand has increased to the record level of £A1,722,777, compared with the previous figure of £A1,229,048. Group sales at £A31,400,000 were also a record. The dividend is being raised from 7 to 8 per cent with the final payment unchanged at 4½ per cent.

International Combustion (Holdings) Ltd.

Group net profit after tax of International Combustion (Holdings) Ltd. for the year ended 30 September, 1954, was £629,378, against £528,222, of which £629,004 (£496,109) is attributable to the parent company. A final dividend of 15 per cent, making a total for the year of 25 per cent, is recommended. Last year's total payment was 20 per cent.

Monsanto Chemicals Ltd.

Net sales by Monsanto Chemicals Ltd. in 1954 were a record for the company and 16 per cent above those for 1953. They amounted to £12,634,616 (subject to completion of audit) against £10,852,854. The

continued on page 602

Spectroscopic Solvents

2:2:4-Trimethyl-pentane has been added to the series of specially prepared spectroscopic solvents which the B.D.H. catalogue has included for many years. These are already being issued under the new B.D.H. "specification" labels, in which the transmission minima shown are as under :

SOLVENT	Minimum percentage transmission in a 1 cm. cell at	
	220 m μ	250 m μ
Cyclohexane	45	95
Ether	25	80
Ethyl alcohol 95%	50	95
Ethyl alcohol, absolute	50	95
Hexane, fraction from petroleum	70	95
iso-Propyl alcohol	60	95
2:2:4-Trimethyl-pentane ("iso-octane")	50	95

Prices for B.D.H. solvents for spectroscopy, in small or large quantities, will be quoted on request.

THE BRITISH DRUG HOUSES LTD.

B.D.H. LABORATORY CHEMICALS GROUP

POOLE

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SS/LC/5515

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Law & Company News

continued from page 600

chairman, Mr. E. A. O'Neal Jr., reports that sales of nearly all the company's products increased and both home and export markets contributed to the record total. Although export sales increased, their percentage of turnover at 38 per cent was less than the 40 per cent for 1953 because of the greater increase in home business. The current year has opened with a reasonably good demand for the firm's products, but business both at home and abroad is expected to be subject to even keener competition during 1955. The board has declared a second interim dividend of 15 5/6 per cent, making a total of 22 1/2 per cent for 1954. This compares with a total payment of 20 per cent in 1953. Following the procedure initiated last year, no further distribution is recommended in respect of 1954. Group results, again subject to completion of audit, show a consolidated trading profit of £2,940,407 (£2,354,084). Consolidated net profit after taxation is £880,739 (£750,059), of which £845,984 (£715,724) is attributable to the Monsanto group.

Petrochemicals Ltd.

Petrochemicals Ltd., which has held a 50 per cent interest with Lankro Chemicals Ltd. in the £15,000 paid-up capital of Oxirane Ltd., has now acquired the Lankro share.

Power-Gas Corporation Ltd.

Although group trading profit of the Power-Gas Corporation Ltd. for the year ended 30 September, 1954, was lower than the previous year's figure (£760,289 against £765,737) an increased dividend is being recommended (see THE CHEMICAL AGE, 1955, 72, 498). The statement by the chairman (Dr. N. E. Rambush) explains that the results are considered to show satisfactory progress, taking into account the temporary period of disturbance that accompanied the extension and equipment of the new South Works at Stockton. Production here could not start until the very end of the financial year, but a full year's interest was payable on the sums raised to finance the project. As the works come into full operation, the increased capacity and higher efficiency are allowing the firm to offer speedier delivery and keener prices. The statement, however, contains a

warning that there is no certainty that the current rates of dividend can be maintained.

Redfern's Rubber Works Ltd.

Advance figures for Redfern's Rubber Works Ltd. show a 1954 trading profit of £84,427, compared with £61,076 (including the cost of the company's pension scheme, now treated as a trading expense) in 1953. A final dividend of 5 per cent on the ordinary shares, making 10 per cent for the year, plus a bonus of 7 1/2 per cent will be recommended to the annual general meeting on 31 March, together with the half-yearly preference dividend of 3 1/4 per cent.

Revertex Ltd.

A preliminary announcement from Revertex Ltd. shows that net profit for the year ended 30 September, 1954, was £190,077, against £101,993 in the previous year. A final dividend of 15 per cent is recommended, making a total payment for the year of 25 per cent. This is the same as last year but on ordinary capital of £275,000, against £250,000. A one-for-two scrip issue is announced to members on the register on 25 February and a resolution will be proposed at the annual general meeting to increase the authorised capital to £500,000.

Shawinigan Chemicals Ltd.

The Shawinigan Water & Power Company reports that its wholly-owned subsidiary, Shawinigan Chemicals Ltd., had a net profit in 1954, after providing for income and profits taxes, of \$1,842,909. The chemicals company's net assets are shown at \$21,155,821, including its interests in subsidiary companies in Canada, the United States, and the United Kingdom. Shawinigan Chemicals owns and operates plants at Shawinigan Falls, Que., using power supplied by the parent company. It is the largest manufacturer in the British Commonwealth of calcium carbide. Shawinigan Products Corp., and Shawinigan Ltd., wholly-owned subsidiaries of the company, act as selling agents for the latter's products in the United States and in the United Kingdom respectively. Shawinigan Water & Power's research division in 1954 succeeded in producing high-grade titanium metal experimentally on a small scale by electrolytic means, using Sorel, Quebec slag as a raw material. Patents have been obtained in several countries and development work has now been advanced to the pilot stage.

Process "teething" Troubles?



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Many chemical processes are profoundly affected by traces of heavy metals whose introduction via reactants, water or plant materials is unavoidable. These can often be inactivated by very small amounts of SEQUESTROL (ethylene-diamine-tetra-acetic acid Geigy). There is a wide range of SEQUESTROL derivatives for specific applications and technical service is always available.

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Next Week's Events

MONDAY 7 MARCH

Royal Institute of Chemistry

London: Woolwich Polytechnic, S.E.18, 7.30 p.m. 'Some Chemical Aspects of Forensic Science' by L. C. Nickolls (with the Woolwich Polytechnic Scientific Society).

SCI (London Section)

London: Chemical Society's Rooms, Burlington House, Piccadilly, 6.30 p.m. 'Utilisation of Fission Product Radiation' by J. Wright.

WEDNESDAY 9 MARCH

SCI (Yorkshire Section)

Huddersfield: The Technical College, 6 p.m. 'Attempts at Chemotherapy of Malignant Diseases' by Professor D. Bergel.

SCI (Food Group)

London: Chemical Society's Rooms, Burlington House, Piccadilly, 6.30 p.m. Domestic meeting, 'The Problem of Protein Haze in Beer' by Dr. E. C. Barton-Wright, and 'Factors Affecting the Water Content of Meat' by Dr. E. H. Callow.

Institution of Chemical Engineers

Birmingham: The University, Edmund Street, 6.30 p.m. 'Instrument Performance in Industrial Applications' by J. Illingworth.

Institute of Fuel

Manchester: The Engineers' Club, Albert Square, 2.15 p.m. 'Recent Coal Processing Research' by Dr. D. C. Rhys Jones.

THURSDAY 10 MARCH

Royal Institute of Chemistry

London: West Ham College of Technology, Romford Road, E.15, 7 p.m. 'Fluorine' by Professor H. J. Emeléus (with the West Ham College of Technology Chemical Society).

Chemical Society

Edinburgh: North British Station Hotel, 7.30 p.m. 'The Changing Face of the Gas Industry' by Dr. A. Marsden (joint meeting with RIC and SCI).

Leeds: Chemistry Lecture Theatre, The University, 6.30 p.m. Lecture by Sir Alexander Todd.

Manchester: Room E.17, College of Technology, 5 p.m. Meeting for the reading of original papers.

Belfast: Agriculture Lecture Theatre, Queen's University, 7.15 p.m. 'The Influence of Structure on Some Properties of

Polymers' by Dr. R. J. W. Reynolds (joint meeting with SCI).

Textile Institute

Manchester: 10 Blackfriars Street, 7 p.m. 'Some Properties of Fibre Blends' by W. A. Richardson.

Institute of Fuel

London: The Institution of Civil Engineers, Great George Street, S.W.1, 5.30 p.m. 'Fuel Developments in Germany' by Dr. W. Gumz.

Society of Instrument Technology

Middlesbrough: Cleveland Scientific and Technical Institution, Corporation Road, 7.30 p.m. AGM and 'General Aspects of Flow Measurement' by C. H. Gregory (I.C.I.)

FRIDAY 11 MARCH

Chemical Society

Newcastle-on-Tyne: Chemistry Building, King's College, 5.30 p.m. Bedson Club Lecture, 'The Rapid Reaction of Haemoglobin with Oxygen and Carbon Monoxide' by Professor F. J. W. Roughton.

Southampton: Chemistry Department, The University, 5 p.m. 'Reactions in Liquid Dinitrogen Tetroxide' by Dr. C. C. Addison.

Swansea: Chemistry Department, University College, 6 p.m. 'Chemistry of Colchicine' by Dr. J. W. Cook (joint meeting with RIC).

Oil & Colour Chemists' Association

Manchester: The Engineers' Club, Albert Square, 6.30 p.m. 'Changing Frontiers in the Analytical Chemistry of Paint Materials' by C. Whalley.

Society of Cosmetic Chemists of Great Britain

London: Royal Society of Tropical Medicine & Hygiene, Manson House, 26 Portland Place, W.1, 7 p.m. 'White Oils' by H. Paton.

Institute of Physics

Manchester: Bragg Lecture Theatre, The University, 6.45 p.m. 'The Nature and Structure of Collagen' by J. T. Randall.

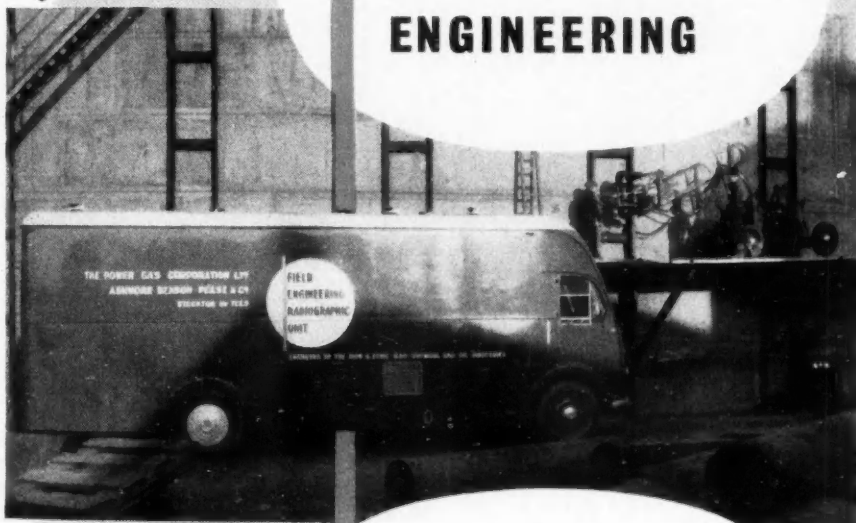
SATURDAY 12 MARCH

Institution of Chemical Engineers

Manchester: College of Technology, 2.30 p.m. Joint meeting of North Western Branch with the Graduates' and Students' Centres in the North West area, on 'Pilot Plant and Scale-up Problems.'

LEADERS IN FIELD ENGINEERING

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Petrochemicals Bid

Acceptance of Shell Offer Recommended

SHELL Chemicals Ltd. has made a conditional offer to buy for £5,000,000 the undertakings and assets of Petrochemicals Ltd., and the directors of Petrochemicals have recommended its acceptance. They consider it 'a very fair price,' as any future success depends on the expenditure of further large sums for new and modern plant.

Of Petrochemicals' present liabilities of about £10,000,000, over £9,500,000 is due to the Finance Corporation for Industry.

In the last annual statement of the chairman, Mr. G. H. Owtram (THE CHEMICAL AGE, 1954, 71, 1108) a 'considerable improvement' was reported in the position of Petrochemicals, although there was still a group loss attributable to the parent company. But at least £3,000,000 more capital is said to be needed.

By spending this sum turnover could be considerably increased. At present, with a capital expenditure of £12,000,000, turnover is between £4,000,000 and £4,500,000.

There are about 400 shareholders of Petrochemicals Ltd., mostly trusts and insurance companies. They are considered to be lucky to obtain the prices offered, especially as the Finance Corporation for Industry could have foreclosed and left them nothing.

Shell Chemicals' offer is open until 18 March. When it becomes unconditional, the Petrochemicals board will be replaced by Shell nominees.

Details of the offer are as follows:—

Shareholders in Petrochemicals are offered 4s. for each of the 90,000 5 per cent £1 preference and 2s. for each of the 2,612,500 £1 ordinary shares. Holders of the £2,500,000 5 per cent second secured loan stock, 1959, and option certificates issued therewith are conditionally offered 10s. per £1 of stock, interest arrears being waived, and 3d. for each £1 nominal amount of the shares covered by the options.

For former holders of the 4 per cent registered 'B' notes of Petrocarbon, outstanding interest of £51,189 will be discharged by payment of 4s. per £1 of interest due.

Memorial Service to be Held

A memorial service for the late Sir Edward Mellanby, who died on 30 January, will be held at the Church of St. Martins-in-the-Fields at 11.30 a.m. on 17 March.

Synthetic Fibre Paper

A REPORT from New York states that E.I. du Pont de Nemours and Co. Inc. have successfully produced paper from synthetic fibres for the first time. The paper is said to be three to ten times as strong as paper made from conventional pulp or rags. It is made experimentally from nylon fibre, Dacron (the American name for Terylene) polyester fibre and Orlon acrylic fibre.

The cost of manufacture is higher than that of wood pulp paper. Du Pont have said they will not produce it themselves but were giving details of the process to the paper industry.

Market Reports

LONDON.—An active interest has been maintained over the whole range of industrial chemicals and contract delivery specifications continue to cover good quantities. Supplies for the plastics and paint industries are being called for, and a seasonal improvement in the demand for fertilisers has been reported. There have been no outstanding price changes and the undertone is firm. There has been no change in the coal tar products market either in conditions or prices.

MANCHESTER.—A steady movement of supplies of the alkalis and other heavy chemical products to industrial users in Lancashire and the West Riding has been reported on the Manchester market during the past week. Consumption in the textile and allied industries keeps up fairly well for the time being, though the outlook for the cotton trade is giving rise to some anxiety. A fair number of fresh inquiries covering a wide range of chemicals has been reported. The demand for fertilisers continues to be a little more active, and a steady outlet is being found for most of the light and heavy tar products.

GLASGOW.—After a really quiet opening the second half of the week has been extremely busy and a considerable volume of business has been done both on a spot and forward basis, although the uncertainty in price with regard to forward delivery on certain products has undoubtedly slowed up demand to some extent. On the whole, however, the upward trend in demand is being maintained and the export market is also quite lively.

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SITUATIONS VACANT

The engagement of persons answering these advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive, or a woman aged 18-59 inclusive, unless he or she, or the employment, is excepted from the provisions of the Notifications of Vacancies Order, 1952.

BRITISH INDUSTRIAL SOLVENTS

A Division of The Distillers Company Limited, manufacturers of bulk organic chemicals, invites applications for the post of **GENERAL SALES MANAGER** to take over administrative responsibility for Home and Export Sales. It should be emphasised that the post is one for a top ranking executive, and only applicants who have a wide commercial experience in the Chemical Industry in the U.K. will be considered. Preferred age, 37-47. Salary will be the subject of negotiation. Applications will be dealt with in strict confidence by the Division Managing Director, and should be addressed in envelopes marked "Private and Confidential," to:—

Division Managing Director,
British Industrial Solvents,
Devonshire House,
Mayfair Place,
Piccadilly, London, W.1.

BRITISH INDUSTRIAL SOLVENTS

also require

SENIOR and JUNIOR EXECUTIVES

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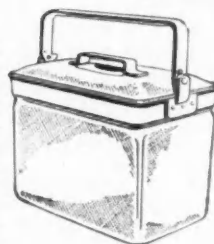
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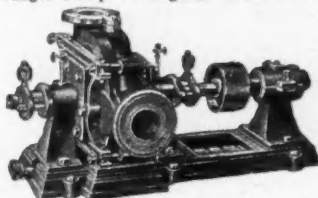
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INDEX to advertisers in this issue

	Page		Page
A.P.V. Co., Ltd. (The)	Front Cover	Kestner Evaporator & Engineering Co., Ltd.	566, 570, 611
Airguard Ltd.	570		
Ancon Metals & Chemicals Ltd.	607	Leigh & Sons Metal Works Ltd.	612
Ashmore, Benson, Pease & Co.	605		
Baines, Leonard, & Co., Ltd.	Cover ii	Marchon Products Ltd.	Cover iv
Beryllium & Copper Alloys Ltd.	574	Mervyn Instruments	Cover ii
Blundell & Crompton Ltd.	Cover iii	Monsanto Chemicals Ltd.	576
British Drug Houses Ltd. (The)	601	Moore, W. & E., Ltd.	571
British Electrical Development Association	560		
Bush, W. J., & Co., Ltd.	557	Negretti & Zambra Ltd.	558
		Nu-Swift Ltd.	610
Chemitrade Ltd.	Cover ii		
Classified Advertisements	608, 609, 610	Pascall Engineering Co., Ltd.	607
Daily Mail Publication	561	Penrhyn Quarries Ltd.	611
Dalzell Electric Welding Co., Ltd.	559	Powell Duffryn Carbon Products Ltd.	563
		Power-Gas Corporation Ltd. (The)	605
Elcontrol Ltd.	566	Prodorite Ltd.	571
Ferris, J. & E., Ltd.	570		
Geigy Co., Ltd. (The)	603	Q.V.F. Ltd.	569
Haller & Phillips Ltd.	562	Rediweid Ltd.	568
Harris (Lostock Gralam) Ltd.	Cover iii	Richmond Welding Co.	611
Haughton's Metallic Co., Ltd.	611	Rozalex Ltd.	570
Holmes Bros. Paint Machinery Ltd.	612		
Holmes, W.C., & Co., Ltd.	568	Siebe Gorman & Co., Ltd.	572
Hopkin & Williams Ltd.	565	Stockdale Engineering Co., Ltd.	Cover iii
		Sutcliffe Speakman & Co., Ltd.	564
Johnson, Matthey & Co., Ltd.	573		
		Waddington, G., & Son Ltd.	570
		Wallach Bros. Ltd.	572
		Wilkinson Rubber Linatex Ltd.	567
		Wood, Harold, & Sons Ltd.	612

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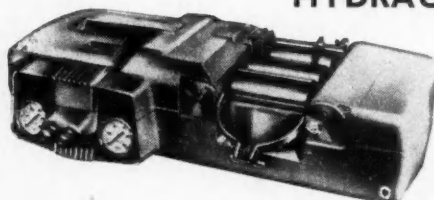
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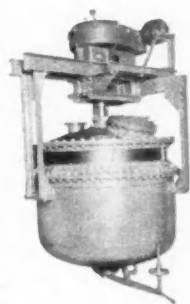
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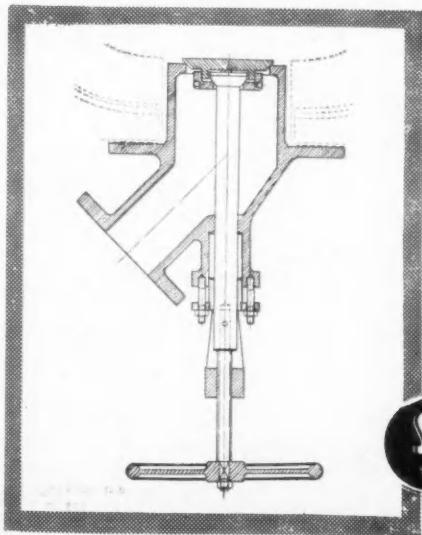
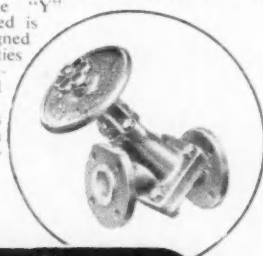


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